DRAFT

Chelsea Municipal Harbor Plan and Designated Port Area Master Plan

January 22, 2019

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- John DePriest, City of Chelsea Planning & Development Department
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Executive Summary

Exploring the banks of Chelsea Creek today, one might not be aware of the area's rich history as an agricultural resource for Native Americans and European settlers, the site of the first naval engagement of the Revolutionary War, or the location of thriving ship-building businesses. Nevertheless, the oil tanks and parking lots that now dominate the Chelsea side of the Creek continue the area's legacy of contributing to the regional economy and culture.

For some, the proximity to deep-water shipping channels, Logan Airport, and the City of Boston makes Chelsea an ideal place to continue to develop industrial uses. For others, the current uses, poorly maintained drainage, sidewalks, crossings, and waterfront paths, limited public space, and legacy contamination are barriers to public access and enjoyment of the Creek.

Recognizing the challenges and opportunities along the Creek, the City and the Commonwealth initiated the development of a Municipal Harbor Plan and Designated Port Area (DPA) Master Plan. Building on previous public visioning processes including the 2016 initiative facilitated by the Metropolitan Area Planning Council, and several meetings with landowners, city and state officials, residents, businesses, and other stakeholders, this plan is the culmination of years of research and public engagement regarding the uses of, access to, and opportunities along Chelsea Creek.

This plan encompasses only the Chelsea portion of the Chelsea Creek Designated Port Area—a state-level designation intended to protect shorelines for water-dependent industrial uses—as well as a small

number of parcels recently removed from the DPA. It also considers the impact upon the DPA of adjacent upland parcels that contribute to the industrial character of the study area. A Municipal Harbor Plan is not an opportunity for the community to envision a future waterfront without industrial uses. Rather, it is a pragmatic plan to build upon existing conditions; leverage prior state, federal, and private investments in the port; and maximize public benefits within the existing regulatory framework.

Part of the value of this plan is that it documents existing conditions on topics including:

- public access,
- land use,
- environmental conditions,
- natural resources,
- dredging,
- transportation,
- the state of shore-side infrastructure,
- regulatory conditions,
- potential impacts of climate change, and
- economic opportunities.

As such, as the plan is implemented, it will serve as a benchmark for measuring progress and impacts.

The process of preparing this long-term, comprehensive, municipally-driven plan involved the participation and cooperation of residents, businesses, property owners, and city, state, regional, and federal government officials. This multi-stakeholder engagement process resulted in a municipal harbor plan that balances the multiple objectives of economic development, job growth, improved quality of life, climate change resilience, and environmental protection for the waterfront through a series of strategies intended to advance the following policies covering eight key topics:

- **Public Access*:*** Create and maintain physical and visual public access that promotes recreation, relaxation, engagement with the waterfront, and economic development.
- **Public Programming:** Develop, support, and maintain public programming that creates economic and cultural opportunities for the community and expands the locations where this programming can occur along the waterfront.
- **Economic Development:** Encourage uses in the harbor planning area that will create living-wage, local jobs, support the local economy, and contribute to regional growth.

- **City Zoning:** Ensure that the city's land use regulations effectively promote the policies of this plan and align with the relevant policies of MGL Chapter 91, the Public Waterfront Act.
- **Transportation:** Increase opportunities for users of all modes and all abilities for improved transportation to, from, and through the Chelsea Creek waterfront while balancing the legitimate needs of both maritime and land-based users.
- **Infrastructure Improvements:** Ensure that waterfront infrastructure is safe and adequate to accommodate existing and anticipated uses, and ensure that infrastructure improvements address predicted sea-level rise and storm-surge scenarios based upon the best available science.
- **Climate Change:** Minimize economic, social, and environmental impacts of climate-change-related flooding and encourage site and infrastructure improvements that mitigate and adapt to projected flooding and sea-level rise.
- **Pollution:** Encourage waterfront uses in a manner consistent with all state and federal environmental regulations, promote the remediation of contaminated sites, and expand progress in realizing the promise of the Clean Water Act of swimmable and fishable waters.

With a state approved DPA Master Plan/Municipal Harbor Plan, this document is not only a guide for decision making by the City, it also creates policy for state agency actions—permitting, planning, and programmatic—in the planning area. In this way, the plan offers several benefits to the City, its residents, businesses, existing and potential land-owners, and others. These benefits include:

- *Improving predictability in decision making* by modifying certain state Chapter 91 standards to meet local planning objectives. Specifically, Chelsea's plan provides for needed flexibility in locating and developing commercial and supporting industrial uses in the Designated Port Area.
- *Helping to realize economic benefits* by creating clear guidelines on land use standards, policies, and trends which may lead to increased investments and job density along the waterfront.
- *Creating social benefits* by providing a framework for securing increased public access to the waterfront and funds to support public investments in waterfront improvements.

As a ten-year planning document, this Municipal Harbor Plan and Designated Port Area Master Plan will improve the ways in which the Creek and its waterfront serve the community, the local economy, and the commonwealth in the years to come.

Chapter 1: Purpose and Authority of the MHP and DPA Master Plan

The Chelsea Creek Municipal Harbor Plan and Designated Port Area Master Plan is a planning tool that sets policies and standards for guiding both public and private uses of the land and water in the planning area in a manner consistent with the community's vision and objectives. As such, the plan sets forth strategies to increase public access to Chelsea Creek, promote economic development and job creation for Chelsea residents, and promote water-dependent use consistent with 310 CMR 9.00, Waterways.

As a state-approved harbor plan and designated port area master plan developed through a robust public process, this document creates policies to inform and guide the actions of state agencies relative to waterway and waterfront development.

This plan is intended to be effective for ten years unless otherwise amended.

The City of Chelsea prepared this Municipal Harbor Plan and Designated Port Area Master Plan pursuant to 301 CMR 23.00, Review and Approval of Municipal Harbor Plans.

Chapter 2: The Municipal Harbor Plan and DPA Master Plan Planning Area

In order to focus the scope of the Municipal Harbor Plan, the planning area was limited to parcels that were included in the Chelsea Creek Designated Port Area prior to the 2016 boundary review. The planning area extends along Chelsea Creek from the McArdle Bridge to the Mill Creek crossing of the MBTA commuter rail at the Revere city line and also encompasses the land and water portions of the Chelsea Creek Designated Port Area[1] within the city's municipal boundary, as shown in Figure 1. The study area is bounded on the upland side by Pearl Street, Marginal Street, Eastern Avenue, and the MBTA railroad right-of-way and on the water side by the Chelsea/East Boston/Revere municipal boundary.

The harbor planning area for the Chelsea Municipal Harbor Plan captures diverse land uses with historical, economic, and cultural significance. Since its early days near the site of the first permanent settlement on Boston Harbor and as the site of the first naval engagement and second military battle of the American Revolution, this area has welcomed waves of immigrants and been shaped by its proximity to the water for centuries. Like many industrial urban waterfronts throughout the country, however, the historical and cultural value of this stretch of coastline is difficult to appreciate given the lack of public access and attractions and the high rates of sediment and water pollution. Nevertheless, the community and City believe the waterfront can become a cultural and economic highlight for the City, its residents, and the region.

[1] The full description of the Chelsea Creek Designated Port Area is available at: https://www.mass.gov/files/documents/2016/08/ri/chelsea-creek-dpa-designation-decision-2016.pdf.

Figure 1: Planning Area Boundary

Chapter 3: Planning Process

The community vision for the Chelsea portion of Chelsea Creek builds upon the area's considerable history as a driver of the local and regional economy while simultaneously addressing the need to reclaim strategic locations for recreational and cultural uses by residents in nearby neighborhoods. To that end, the Municipal Harbor Plan and Designated Port Area Master Plan present strategies and guidelines designed to (1) enhance public access, (2) increase the density of living-wage jobs for Chelsea residents, (3) preserve the industrial and commercial character of the waterfront and adjacent upland area, and (4) encourage water-dependent industrial uses and opportunities that contribute to the local tax base.

Public Access: More specifically, public access in urban environments such as Chelsea presents opportunities to foster a sense of community through shared space, to reconnect residents with their working waterfront, to develop an appreciation of current and historic land uses and natural resources, and to promote physical activity. Water and sediment pollution, industrial activity, isolation from upland communities, federal policies, and state regulations have created challenges to securing safe public access within the planning area. This harbor plan builds upon the notion that carefully sited public access and related programming can create many benefits, including bringing positive attention to—and even celebration of— working waterfronts, while allowing waterfront industrial activities to occur safely and efficiently.

Living-Wage Jobs: This plan is developed with the vision that the waterfront can create and sustain local, living-wage jobs and promote affordable living conditions for the existing population of Chelsea. The City is home to a large workforce that is well-positioned to support industrial and commercial operations. The need to preserve and expand the local job market on existing industrial land is critical as the greater Boston area economy continues to add new jobs and faces growing pressure to meet increasing residential demands. Maintaining the waterfront and the adjacent upland for industrial and commercial uses not only has the potential to increase local jobs, but will also lessen the pressure for gentrification in adjacent neighborhoods.

Industrial Character: Linked to the vision of improving community perception of the working waterfront through increased public access, this Harbor Plan and DPA Master Plan also recognizes the special role that the Chelsea Creek DPA plays in the state and regional economy. With high-end residential developments, private boating facilities, and other exclusive uses competing for waterfront locations across the Commonwealth, the City acknowledges that its waterfront is a unique resource that should be protected for water-dependent and other appropriate industrial uses, even if this protection sometimes conflicts with other community goals. However, while the resource is regional, the burdens of preserving this resource fall disproportionately on an environmental justice community. Areas upland of the DPA will be zoned to minimize conflicts between residential communities and heavy industrial uses. The community envisions a Chelsea Creek where shipping traffic coexists with reliable mass transit; where there are reasonable time restrictions on the opening of movable span bridges.

Regulation: The plan recognizes that both zoning and DPA regulations have constrained and suppressed economic development opportunities along the waterfront and that they are currently unaligned. The city intends to address this challenge by implementing strategies that preserve the potential for water-dependent industrial uses, while still realizing jobs and revenue from temporary and supporting uses capable of occupying DPA parcels. Through DPA regulations, the Commonwealth has lowered the value of waterfront industrial land and placed a significant economic burden on the City without compensation. While the benefits are regional, the costs are local. The community seeks, though the permitting of supporting uses that are accessible to residents and by flexibility in the definition of temporary uses, to encourage the development of flexible spaces for industrial uses that can enable both water-dependent and light industrial or manufacturing uses, especially those with minimal negative environmental impacts, high rates of job creation, and benefits to the local community.

3.2 Informing the Plan

The vision for this harbor plan and DPA master plan draws from many years of community engagement and planning conducted by the City of Chelsea, GreenRoots, the Metropolitan Area Planning Council (MAPC), and others (see Appendix F for a list of recent studies and planning documents). In particular, the planning area and vision are influenced by the outcome of the 2016 DPA Boundary review, which removed the Railroad South and Railroad North planning units from the DPA due to the finding that, "the land areas for these two planning units do not possess a substantially developed shoreline which creates a functional connection to a DPA waterway".[2] The 2016 decision solidified the DPA boundary for a minimum of five years[3], removed three large properties from the DPA, and provided an opportunity for public discussion about the use of waterfront parcels and the adjacent waterway.

The planning process was also heavily influenced by the 2016 Chelsea Creek Waterfront Visioning effort conducted by MAPC and the City of Chelsea[4], which highlighted the community's interest in public access, water transportation, and economic development. The visioning effort engaged more than 130 community members and other stakeholders through two workshops designed to elicit input on balancing the interests of the community and the needs of the working waterfront.

In addition to the DPA boundary review and the visioning effort, community members attended three public meetings to learn more about the harbor plan and DPA master plan and provide input, as described in Table 1. These meetings, which included both English and Spanish content, were announced through press releases, were posted on the city's website, and were listed on the project website hosted by MAPC. The project website also contained handouts and presentations from the meetings, as well as meeting summaries and contact information for those who could not attend the meetings or wanted to learn more.

[2] Executive Office of Energy and Environmental Affairs Office of Coastal Zone Management. 2016. Designation Decision for the Chelsea Creek Designated Port Area Chelsea, MA.

[3] 301 CMR 25.03(2)(a).

[4] Metropolitan Area Planning Council. 2016. A Vision for the Chelsea Waterfront.

Table 1: List of public meetings

Date	# of Participants	Format/Topics
June 11, 2018	32 participants signed in	Presentation included introduction to the harbor and DPA planning process, overview of Chapter 91 and DPA regulations, and opportunity for public comment
August 18, 2018	20 participants signed in	Outdoor drop-in workshop to present information on the process and gather input on community interests such as public access and economic development.
November 20, 2018	25 participants signed in	Presentation included an update on the planning process and a review of proposed strategies

A core group of thirteen appointed community members and stakeholders also guided plan development as part of the Harbor Planning Group. The Harbor Planning Group represented a variety of interests including the environment, the local community, industry, and the City. Members met six times (May 5, 2018, June 5, 2018, July 30, 2018, August 13, 2018, October 10, 2018, and November 20, 2018) throughout the planning process to advise on public participation and plan content and format. Members of the Harbor Planning Group included:

- Shuvam Bhaumik, City of Chelsea Planning Board
- Leo Robinson, Chelsea City Council
- Robert Linch, City of Chelsea Conservation Commission
- John DePriest, City of Chelsea Planning & Development Department
- Fidel Maltez, City of Chelsea Public Works Department
- Roseann Bongiovani, GreenRoots
- Hugo Perdomo, Chelsea resident
- Alexandra Christmas, Chelsea resident
- Stephanie Alvarado, Chelsea resident, College student
- Dan Adams, Landing Studio
- David Cox, Mass Bay Harbor Safety Committee
- Reed Passafaro, Massport
- Patrick Herron, Mystic River Watershed Association

Lastly, the planning team engaged the owners of key properties within the planning area to obtain information about current and future uses. A list of those interviews is contained in Appendix C.

Consistent with the community vision as described above, a summary of stakeholder feedback is presented in Figure 2.

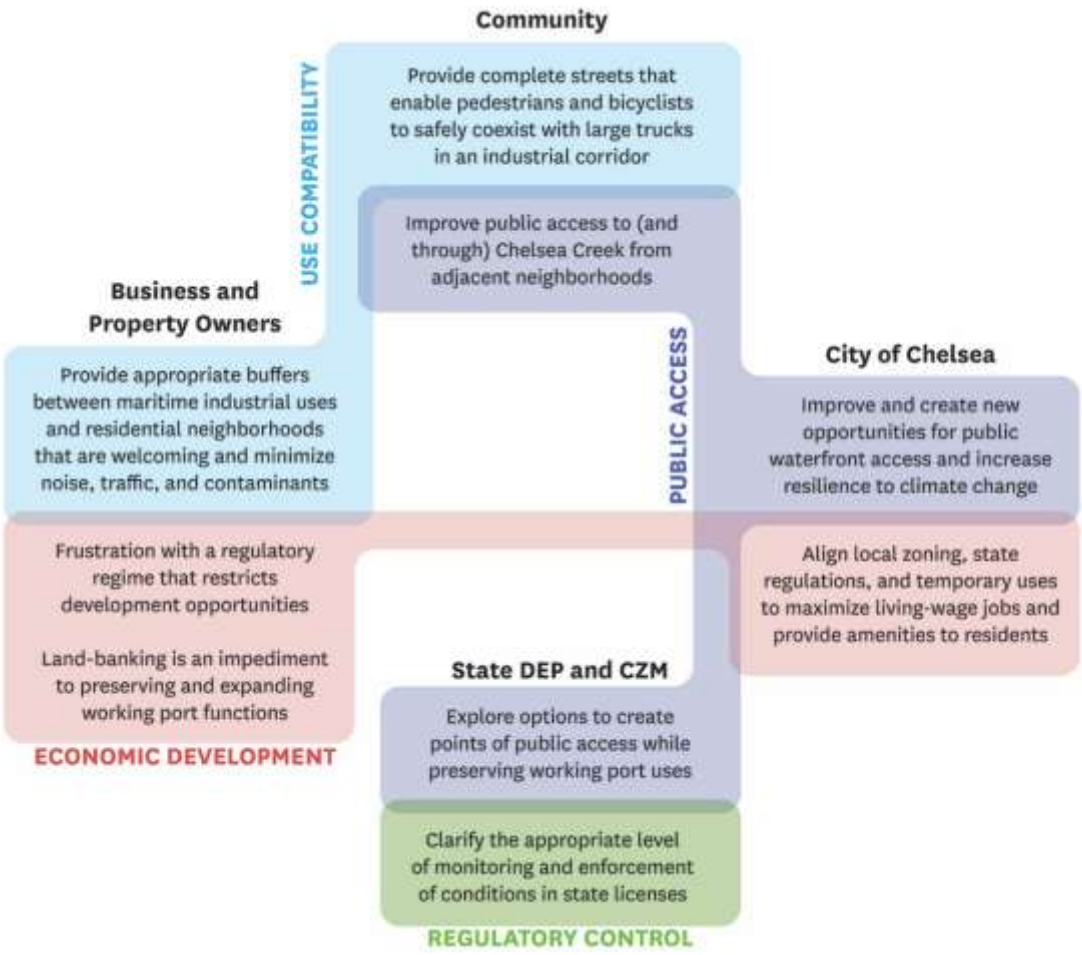

Figure 2: Key Themes from Stakeholders

3.3 Regulatory Framework

This Municipal Harbor Plan and Designated Port Area Master Plan was developed pursuant to 301 CMR 23. (See Figure 3 for a diagram of authorities and regulations pertinent to plan development, approval, and implementation.) The City submitted a Request for Notice to Proceed on March 30, 2018, and the Notice to Proceed was approved by the Massachusetts Office of Coastal Zone Management on June 11, 2018 and published in the Environmental Monitor on June 20, 2018. Plan development occurred between June 2018 and January 2019. Chelsea City Council authorized submittal of the Plan on XXXX. The Plan received State Approval from the Secretary of Energy and Environmental Affairs on XXXX.

Specific information about the federal, state, and municipal regulations pertaining to the issues identified in the document can be found in section 4.7, below.

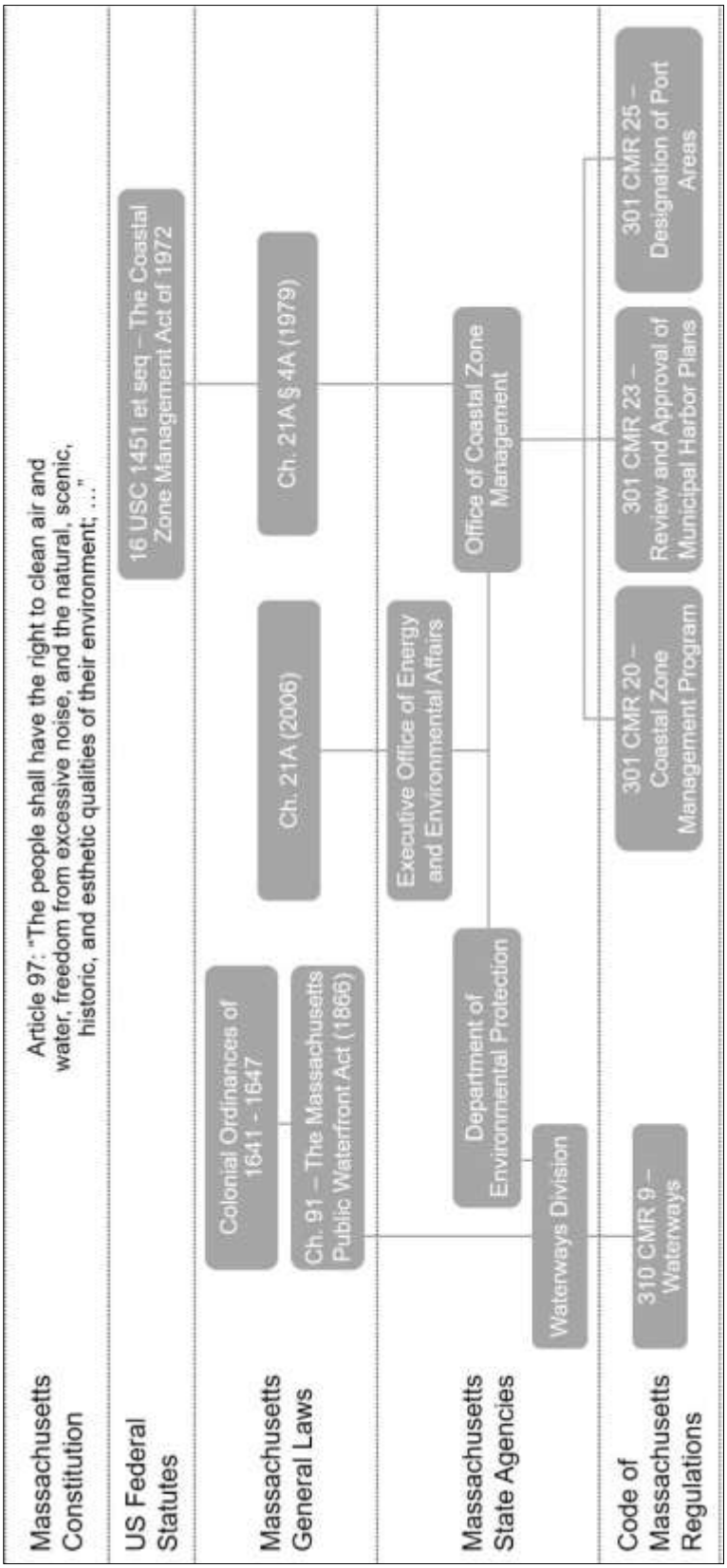

Figure 3: Regulatory Framework for Municipal Harbor Plans and DPA Master Plans

Chapter 4: Historic and Current Conditions

4.1 Public Access

Public access – which includes visual access as well as physical access on, to, and along Chelsea Creek -- has long been important to Chelsea and its residents. Access is limited, however, due to factors such as frequent bridge openings, existing structures, and heavy commercial vessel and vehicle traffic.

While historic activities such as swimming and recreational boating in the Creek are no longer safe due to industrial contamination in the water and the benthos, the community continues to advocate for public access. The Public Trust Doctrine, which is a legal principle that dates back 2000 years to Roman law, states that the air, sea, and the shore belong to the public at large, and the government must protect these resources for the public's use.[5] The primary tool in Massachusetts to protect and promote this public use is Massachusetts General Law Chapter 91. According to Chapter 91, the State is responsible for ensuring the public has the right to use and physically access tidelands (defined as "present and former submerged lands and tidal flats lying below the mean high water mark") and waterways[6]. More specifically, Commonwealth tidelands, those which have been owned by the public, must be used for a public purpose or be held in trust for the benefit of the public[7]. The public also has the right to access for fishing, fowling, navigation, and the natural derivatives thereof on private tidelands. The areas along Chelsea's waterfront which are subject to Chapter 91 jurisdiction can be found in Figure 4.

[5] For Love of Water. What is the Public Trust? Online at: http://flowforwater.org/public-trust-solutions/what-is-public-trust/.

[6] M.G.L. Chapter 91.

[7] *Ibid.*

Figure 4: Land subject to Chapter 91 Jurisdiction in Chelsea, MA.

In DPAs such as Chelsea Creek, state regulations reserve all filled tidelands for water-dependent industrial use along the waterfront and prohibit other potentially conflicting uses on tidelands subject to Chapter 91. While some types of public access are prohibited, the regulations do allow for "*compatible public access*".[8]

In DPAs, lateral public access (*e.g.*, a pathway along the waterfront) is generally not allowed as it is considered an impediment to water-dependent uses. An exception to this is lateral access along the perimeter of a parcel with a *temporary* Chapter 91 license, such as that presently located along the Enterprise Car Rental leased parcels at 245-257 Marginal Street in Chelsea. On the other hand, properly designed point access (*e.g.*, a path that leads directly to the water's edge coming from a public right-of-way) is allowed and can also offer space conducive to public gatherings[9] and enable residents and visitors to view and enjoy the working waterfront.

[8] 301 CMR 25.01(2).

[9] Metropolitan Area Planning Council. 2016. A Vision for the Chelsea Waterfront. Online at: ftp://ftp.mapc.org/Chelsea_Waterfront/Chelsea%20Waterfront%20Vision%202016%20Final%20Report.pdf.

Chelsea has a variety of Chapter 91 licenses for projects occurring on the coastal waterfront, some of which have specific public access requirements. Those parcels, including a brief summary of their public access requirements, are listed below. More details on the public access requirements are located in Appendix G.

- **13 and 59 Marginal Street** (DEP License # 5800, issued 7/30/1996): The licensee shall allow the public to use and to pass freely upon the area of the subject property lying between the high and low water marks, for the purposes of fishing, fowling, navigation, and the natural derivatives thereof.
- **245-257 Marginal Street** (DEP License # 4981, issued 10/18/1995): The licensee shall repair and maintain walkway facilities open to the public along the perimeter of the site, and provide parking spaces available to users of the walkway.
- **1 Forbes Street** (DEP license # 13544, issued 7/22/2013): The licensee shall provide public access within the identified areas along the waterfront, including a walkway, public restrooms, signage, trash receptacles, and other amenities.
- **111 Eastern Ave.** (DEP License # 4629, issued 5/24/1995): The licensee shall allow the public to use and to pass freely upon the area of the subject property lying between the high and low water marks, for the purposes of fishing, fowling, navigation, and the natural derivatives thereof.
- **111 Eastern Ave.** (DEP License # 6862, issued 12/11/1997): The licensee shall construct and maintain a publicly accessible waterfront open space to be located at the southern end of the site.

There are several non-regulatory barriers that affect the community's ability to access and use the waterfront, such as the commuter rail tracks at the northern end of the study area, congested intersections, and a lack of safe street crossings, especially at or near the Charles and Willow Streets intersections with Marginal Street.[10]

Despite the existing limitations to public access, a number of stakeholders are working to improve public access to the waterfront. GreenRoots and the Mystic River Watershed Association, community-based organizations, are engaging community members to achieve environmental justice, climate resiliency, and waterfront access. As an example of one project to expand public access, GreenRoots secured riverfront walkways for public access along Mill Creek, which is a headwater to Chelsea Creek. GreenRoots also installed bilingual interpretive signage along these walkways.

PORT Park and the pier at 197-201 Marginal Street also provide waterfront access, although residents have noted that it is difficult and potentially unsafe to cross the street to visit these areas[11]. Both of these properties are privately owned and the gates at 197-201 Marginal Street are locked, preventing access except during scheduled activities. That said, open spaces such as these work to balance the district's industrial character and the public's need for physical and visual access.

[10] *Ibid.*

[11] Hoghaud, B., et al. Promoting Public Uses on the Chelsea Waterfront. Online at: https://web.wpi.edu/Pubs/E-project/Available/E-project-101316-114938/unrestricted/ChelseaWaterfrontUse.pdf.

In addition to access to and along the water, public access *on* the water is also lacking. The large ships that operate on the Creek are difficult to maneuver, and present safety challenges for recreational boaters. Further complicating matters, all recreational vessels on Chelsea Creek must adhere to a moving exclusion zone that extends 1,000 yards ahead of and behind and 100 yards on either side of any designated escorted vessel[12]. These are the same restrictions that apply to all recreational vessels elsewhere in Boston Harbor.

Fishing is also limited due to water quality issues. In July of 2018, the Massachusetts Department of Public Health (DPH) issued a fish advisory for the Lower Mystic River area in Boston, Chelsea, Everett, Revere, and Somerville. The advisory noted which fish and shellfish are expected to contain contaminants such as polychlorinated biphenyls (PCBs) and arsenic and therefore should not be consumed by anyone, and which fish are considered safe to consume (*i.e.*, bluefish and striped bass, except for pregnant women and children).[13]

4.2 Land Use

The Chelsea waterfront—in its various forms—has continually supported the local community for centuries. The present day industrial activities along Chelsea Creek mask the area's rich agricultural past. The land in and around the Chelsea waterfront was first used by Native Americans who lived near the water during warmer months, where they hunted and harvested fish and shellfish. In the early 1600s, Europeans began to build permanent settlements in the vicinity of the planning area. Throughout the Colonial Period and through the years following the American Revolution, the area was largely farm and pasture land. A tide mill was built near the head of Chelsea Creek in 1734 and the tenant farmers in the area supplied milk and hay to Boston residents and supplied livestock, shellfish, and produce to outgoing vessels[14].

During the Industrial Period, the Chelsea Waterfront supported the growing shipbuilding industry, but shipbuilding was eventually displaced by freight, heavy industry, and warehousing of goods such as lumber and coal as the railroads developed. The industrial, manufacturing, and maritime uses of the waterfront persisted through World War II. With the development and expansion of Logan Airport following World War II, the waterfront also became the site of uses to support airport operations[15].

[12] 33 C.F.R. §165.114 Safety and Security Zones: Escorted Vessels-Boston Harbor, Massachusetts.

[13] Massachusetts Department of Public Health. Department of Public Health issues fish advisory for the Lower Mystic River area in Boston, Chelsea, Everett, Revere, and Somerville. Online at: https://www.mass.gov/news/department-of-public-health-issues-fish-advisory-for-the-lower-mystic-river-area-in-boston.

[14] Mastone, V.T., Brown, C., Maio, C. 2011. Chelsea Creek – First Naval Engagement of the American Revolution: Chelsea, East Boston, Revere, and Winthrop Suffolk County Massachusetts. National Park Service American Battlefield Protection Program Grant Agreement No GA-2255-09-018.

[15] *Ibid.*

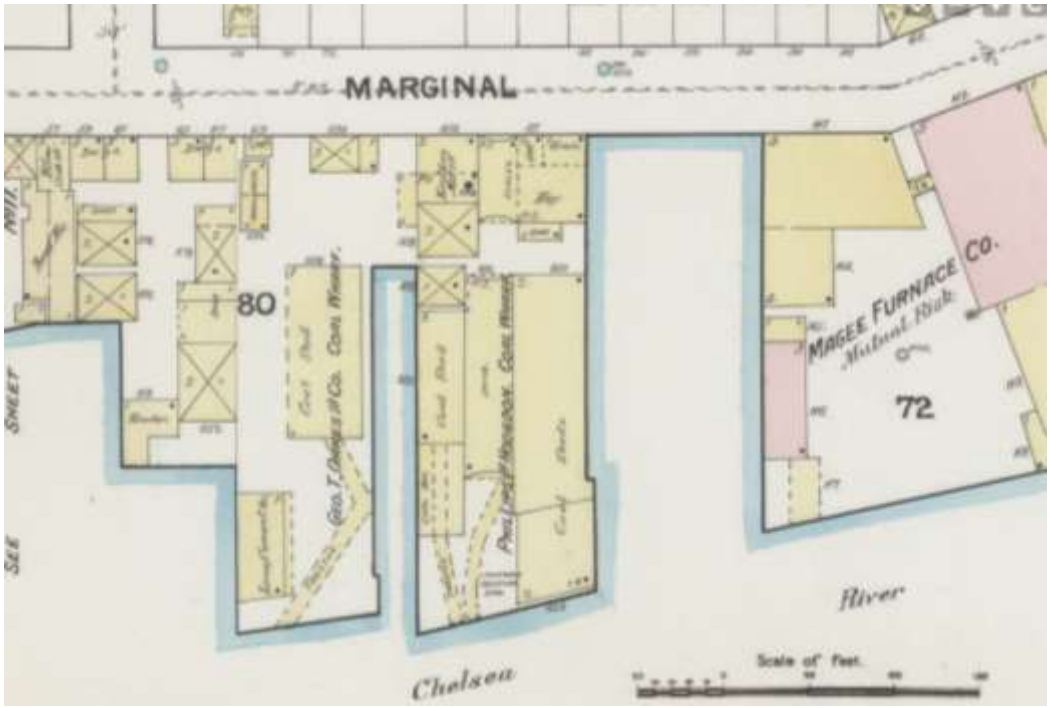

Image: Waterfront uses along Chelsea Creek, 1894[16].

Image: The Forbes Lithograph Manufacturing Company, 1894[17].

[16] Sanborn Fire Insurance Map from Chelsea, Suffolk County, Massachusetts. 1894. Sanborn map Company. Library of Congress Geography and Map Division Washington, D.C. 20540-4650 USA.

[17] *Ibid.*

Chelsea Creek and its waterfront continues to support industrial, manufacturing, and airport-related uses, and existing state regulations require water-dependent industrial uses throughout much of the planning area, as well as on the East Boston and Revere side of the Creek. As described in greater detail in the section on regulatory conditions, the Commonwealth of Massachusetts has established ten Designated Port Areas (DPAs) in Massachusetts (see Figure 5), including a significant portion of Chelsea's waterfront and flowed tidelands, which were designated as a DPA in 1978.

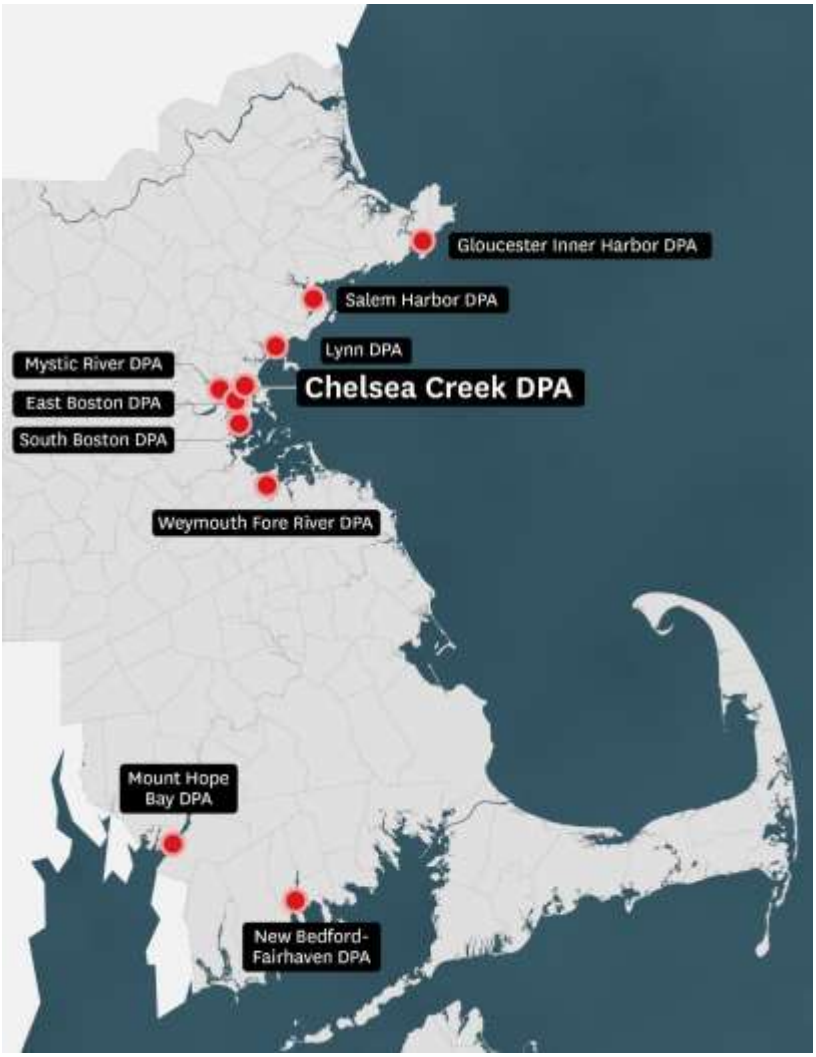

Figure 5: Designated Port Areas in Massachusetts

Within the DPA, state regulations allow for the operation of very specific working-port, industrial uses that require waterfront access and are essential to the economy of Boston, the region, and the state.[18]

[18] Metropolitan Area Planning Council. 2016. A Vision for the Chelsea Waterfront. Online at: ftp://ftp.mapc.org/Chelsea_Waterfront/Chelsea%20Waterfront%20Vision%202016%20Final%20Report.pdf.

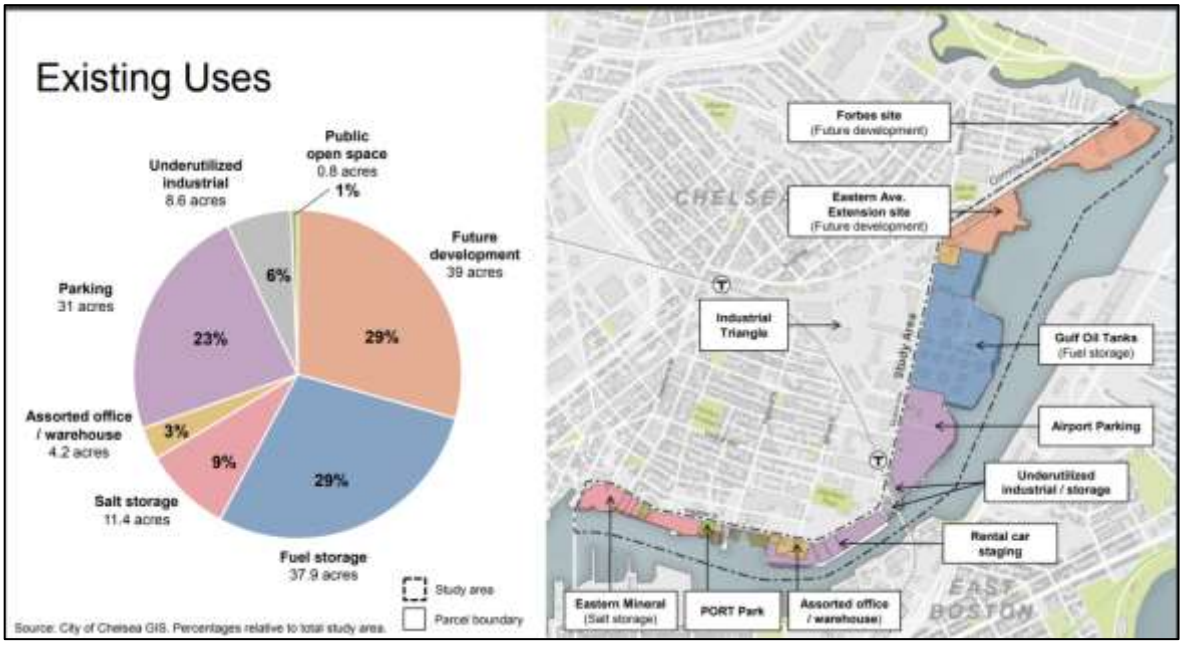

Figure 6: Existing Uses in the Planning Area

More specifically, the water-dependent uses on the Creek play a significant regional role in transporting/storing petroleum, home heating oil, gasoline, and deicing salt supplies for New England. Furthermore, all jet fuel for Logan airport is transported via Chelsea Creek.

On the Chelsea-side of the Creek, examples of DPA-compliant uses include Eastern Mineral's transport and storage of road salt and Gulf Oil's transport and storage of fuel. The Creek is also critical to operations at the Global, Irving, Sunoco, and Coastal terminals on the East Boston and Revere side of the Creek. Approximately 52% of the land area in the DPA within Chelsea is being occupied by water-dependent industrial uses. PORT Park, at the eastern end of 99 Marginal Street is licensed along with the larger parcel and is considered a water-dependent industrial use and is not counted as open space.

Surface parking associated with Enterprise and InterPark are not water-dependent industrial uses, but operate on temporary licenses that may be renewed repeatedly for up to ten years at a time. Two years before the expiration of a temporary license, the holder is required to submit and execute a marketing plan for water-dependent industrial uses. No parcel has ever been converted from a temporary use to a water-dependent industrial use.

Figures 6 and 7 displays the current uses of Chelsea's waterfront.

The DPA regulations, by limiting allowable uses, suppress the value of land along the waterfront and limit the taxes that can be collected on the land. The Commonwealth provides no compensation to Chelsea for hosting critical components of the regional economy and placing limits on its tax base. Property owners, who understand the high intrinsic value of urban waterfront land since the cleanup of Boston Harbor, continue to land-bank parcels rather than sell or rent at depressed values, limiting their economic productivity.

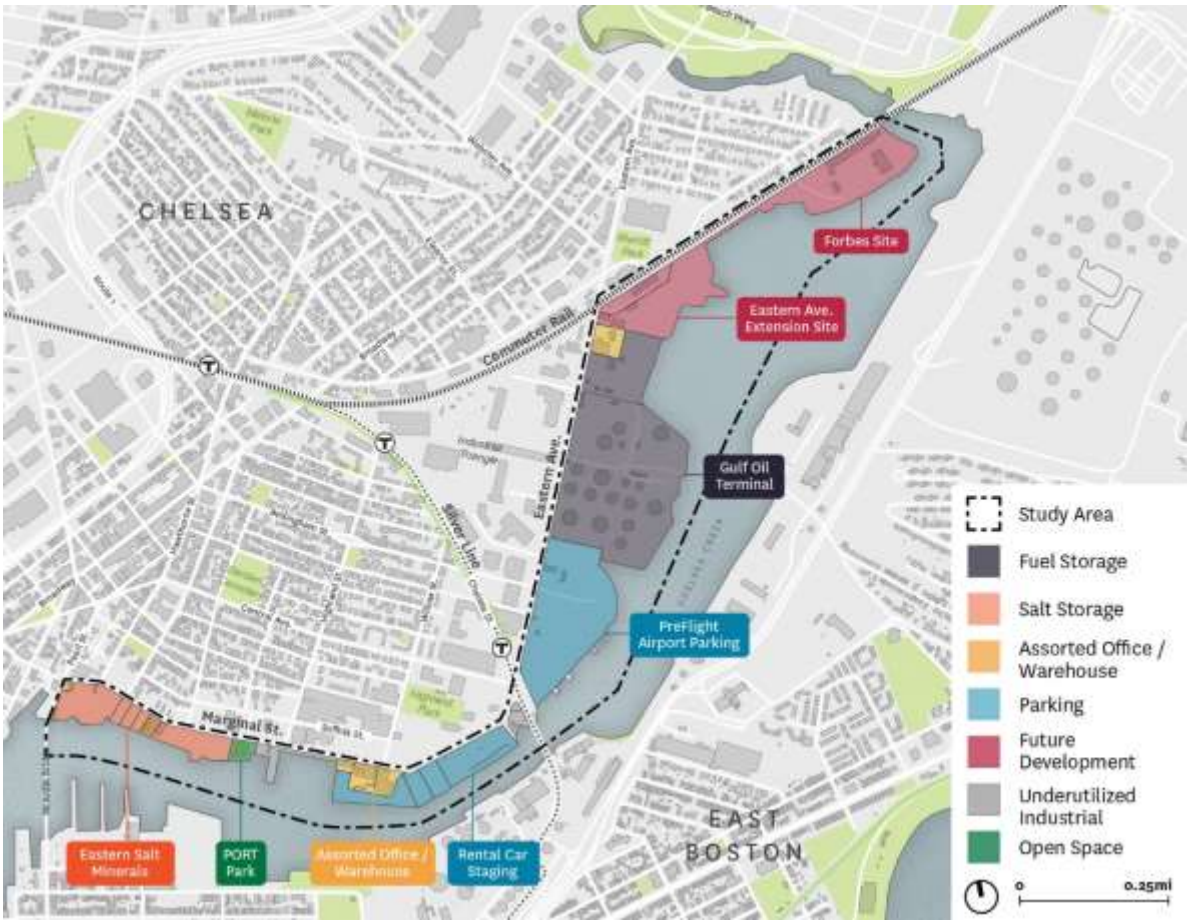

Figure 7: Existing uses in the Planning Area

The northern waterfront area of Chelsea Creek currently contains warehouse and light industrial uses, the MBTA right-of-way, and the Forbes site, which is underutilized and slated for mixed-use development. Just to the south of the Forbes property are the Eastern Avenue Extension sites, the former New England Trawler property, and the Gulf Oil tank farm, which is a marine-dependent fuel storage facility. Opportunities to improve access to the waterfront in front of the Gulf Oil tank farm are limited due to security concerns.

The land located to the south of the Gulf Oil tank farm is primarily comprised of a truck rental facility and long-term parking to support Boston Logan Airport travelers. Just south of the Chelsea Street Bridge, there are two vacant lots owned by the State and the remnants of a public right-of-way where an earlier Chelsea Street Bridge connected to the street grid.

The Enterprise rental car business is also located south of the Chelsea Street Bridge on Marginal Street. Enterprise leases three parcels and owns one parcel within the study area, in addition to several leased parcels upland of the study area. Chapter 91 license conditions on the three leased parcels require public parking and perimeter access for waterfront viewing.

The Publicly Organized Recreation Territory (PORT) Park, Eastern Minerals business operations, and salt piles are located to the southwest of the rental car facility parking lots. Eastern Minerals, which distributes road salt to communities along the United States east coast, owns a salt dock on the

waterfront to allow for ships and barges from overseas to offload salt for road de-icing. Large mounds of salt from these barges accumulate in piles along the waterfront. To allow for public waterfront access, in 2013, Eastern Minerals created the PORT Park community access point near the easternmost salt pile. The area contains a large, publically-accessible, open space for relaxation, events, and theatrical productions, as well as basketball courts and parking. Part of the area is flex-space, used for salt storage in the winter and public space in the summer.

Table 2 contains a more detailed list of parcels in the planning area, along with their primary use(s)). Information about Chapter 91 license terms can be found in Appendix E.

Table 2: Current Land Uses

Address	Primary Use(s)
1 Forbes Street	Vacant. Anticipated mixed-use development (Outside of DPA)
295 Eastern Avenue	Partially vacant. Potential industrial site (Outside of DPA), Atlas Glen-More
305 Eastern Avenue	Glyptal Industrial Paint (Outside of DPA)
291 Eastern Avenue	Vacant – Former New England Trawler
283 Eastern Avenue	Gulf Oil truck depot
123 Eastern Avenue	Gulf Oil fuel storage
111 Eastern Avenue	InterPARK parking. Potential mixed-use redevelopment
143 Eastern Avenue	Former CSX parcel / ROW –Mass DOT
701 Chelsea Street	City of Boston (Bridge operations)
29 Eastern Avenue	State-owned parcel (Vacant)
15 Eastern Avenue	State-owned parcel (Vacant)
0 Eastern Avenue	City-owned abandoned right-of-way
257 Marginal Street	Enterprise rental car staging
249 Marginal Street	Enterprise rental car staging
245 Marginal Street	Enterprise rental car staging
239 Marginal Street	Enterprise parking lot
235 Marginal Street	Car rental (previously Enterprise repair shop)
229 Marginal Street	Harbor Foods
227 Marginal Street	Office space
215 Marginal Street	Abandoned pile field and floating docks
201 Marginal Street	Pier and ramp to floating docks
197 Marginal Street	Parking associated with Pier
99 Marginal Street	Eastern Minerals salt storage/PORT Park
91 Marginal Street	Open space/easement (MWRA parcel)
71 Marginal Street	Eastern Minerals salt storage
69 Marginal Street	Eastern Minerals salt storage
59 Marginal Street	Eastern Minerals salt storage
13 Marginal Street	Eastern Minerals salt storage
11 Marginal Street	Frank's Auto Shop

Despite the activities associated with Gulf Oil and Eastern Minerals, the percent of maritime industrial use in the Chelsea Creek DPA is far lower than that of other Boston-Harbor-area DPAs, while the percent of land used for parking is higher than in other DPAs, as shown in Figure 9.

[Note: Calculations in the figure below may be revised in a future draft. Awaiting determination on methodology. Also, Open Space is 0.5%, not 2%.]

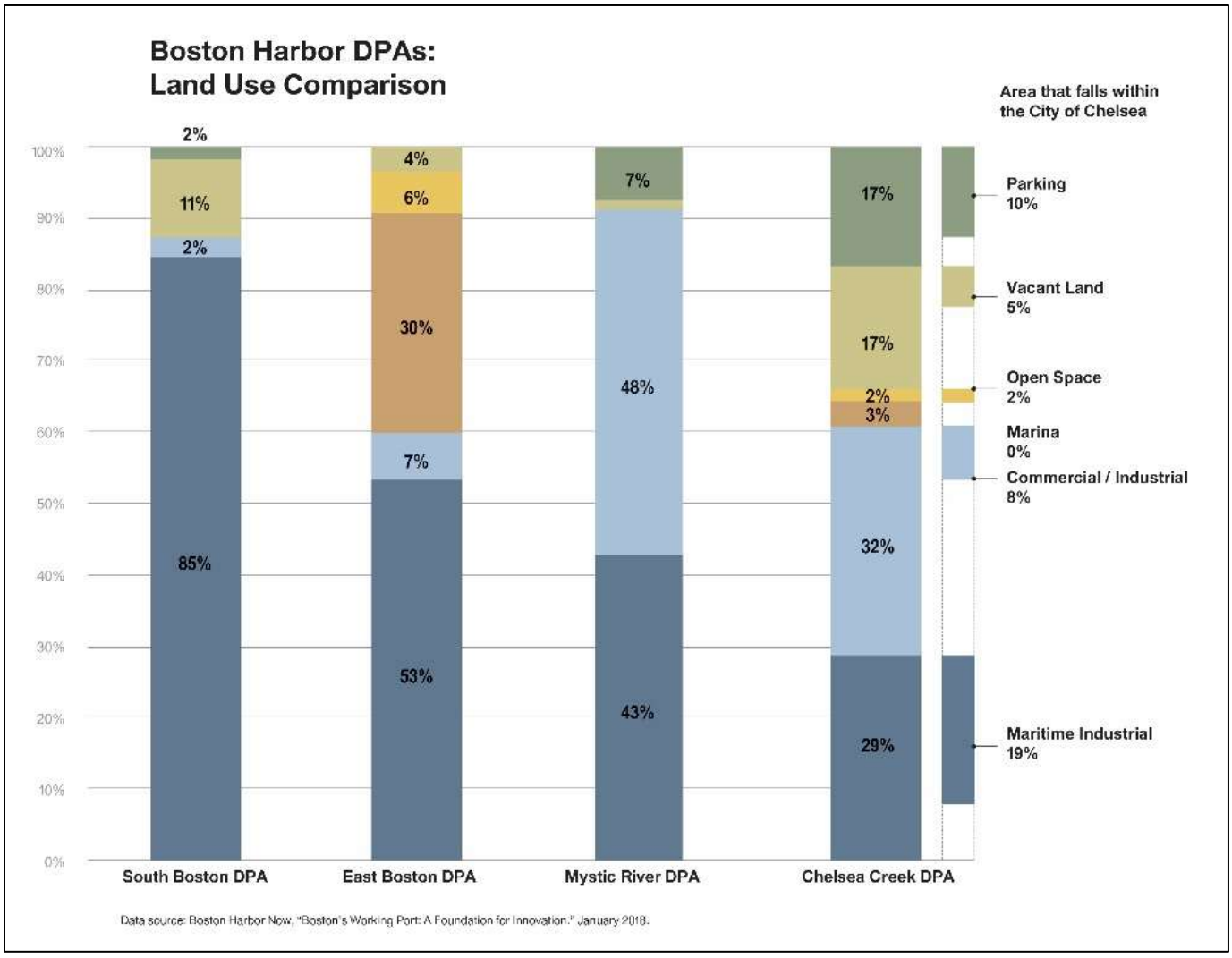

Figure 8: Land Use Comparisons in Boston Harbor Designated Port Areas

4.3 Environmental Conditions/Natural Resources

Chelsea, which used to have extensive salt marshes and other natural resources, has been identified as the third most environmentally-burdened city in Massachusetts.[19] Pollution stems from historic as well as present-day industrial uses that have contributed to the contamination of both the water and the soil[20]. Chelsea Creek also continues to be burdened by multiple annual releases of contaminants in exceedance of Clean Water Act NPDES permits.

Specifically, Chelsea's industrial activity has resulted in oil and other hazardous material contamination. The Massachusetts General Law, Chapter 21E, also known as the Massachusetts Oil and Hazardous Material Release Prevention Act, is a statute which encompasses issues related to the identification and cleanup of property contaminated by releases of oil and/or hazardous material to the environment.[21] Under this law, approximately 48% of the land along the Chelsea waterfront in our study area has Activity and Use Limitations (AULs), which signify the presence of known oil and/or hazardous material contamination remaining at that location after a cleanup under the Massachusetts Contingency Plan. These AULs are a result of the current and historic industrial presence in Chelsea.

The main purposes of an AUL are to 1) provide information on the presence and location of oil and/or hazardous material remaining at the disposal site and related conditions; 2) identify site uses and activities which maintain "No Significant Risk"; 3) identify site uses and activities which should not occur in the future; and 4) specify site owners' obligations to ensure AUL conditions will be met.[22] Figure 9 displays the locations and reference numbers for AULs within the Chelsea Creek study area. MassDEP maintains files on each of these AULs.

[19] Charles River Watershed Association, Mystic River Watershed Association, and Chelsea Collaborative. 2013. Urban Green Infrastructure in Mystic River Communities, Subwatershed Plan for Broadway, Chelsea, MA. Online at: https://static1.squarespace.com/static/563d6078e4b0396c216603c8/t/563e151ee4b0f5552f678830/1375112525085/ChelseaSubwatershedPlan2013_Final.pdf.

[20] Dooling, Shannon. 2017. Hit First and Worst: Region's Communities of Color Brace for Climate Change Impacts. WBUR. Online at: http://www.wbur.org/news/2017/07/26/environmental-justice-boston-chelsea.

[21] M.G.L. c. 21E. Massachusetts Oil and Hazardous Material Release Prevention and Response Act.

[22] Massachusetts Department of Environmental Protection. 2014. Guidance on Implementing Activity and Use Limitations. Online at: https://www.mass.gov/files/documents/2016/08/xy/14-300prdr.pdf.

Figure 9: Sites with Activity and Use Limitations (AULs) in the study area.

Chelsea Creek also experiences water quality issues which are the result of runoff, combined sewer overflows, industrial activity, and other sources. The water quality in Chelsea Creek is monitored by the EPA and the Mystic River Watershed Association at two sites: CHR95S (Chelsea Creek at Condor Street Urban Wild in East Boston), and MIC004 (Mill Creek at Broadway in Revere). Specifically, samples at these sites are analyzed for bacteria, suspended solids, nutrients, conductivity, dissolved oxygen, water temperature, and water color and odor.

In 2017, the Mystic River Watershed Report Card (which is based on how frequently the waterbody meets *bacteria* standards for swimming and boating) gave Mill Creek a grade of F, and Chelsea Creek an A (Figure 11).[23] Mill Creek, a small tidal stream that emerges from a wetland, receives a large amount of wastewater contamination from stormwater.[24] On the other hand, the Chelsea Creek sampling site is closer to the mouth of the creek and has more circulation and flushing, resulting in a better water quality score.

[23] Mystic River Watershed Association. 2017 Water Quality Report Card. Online at: https://mysticriver.org/epa-grade.

[24] Mystic River Watershed Association. Personal Communication. November 2018.

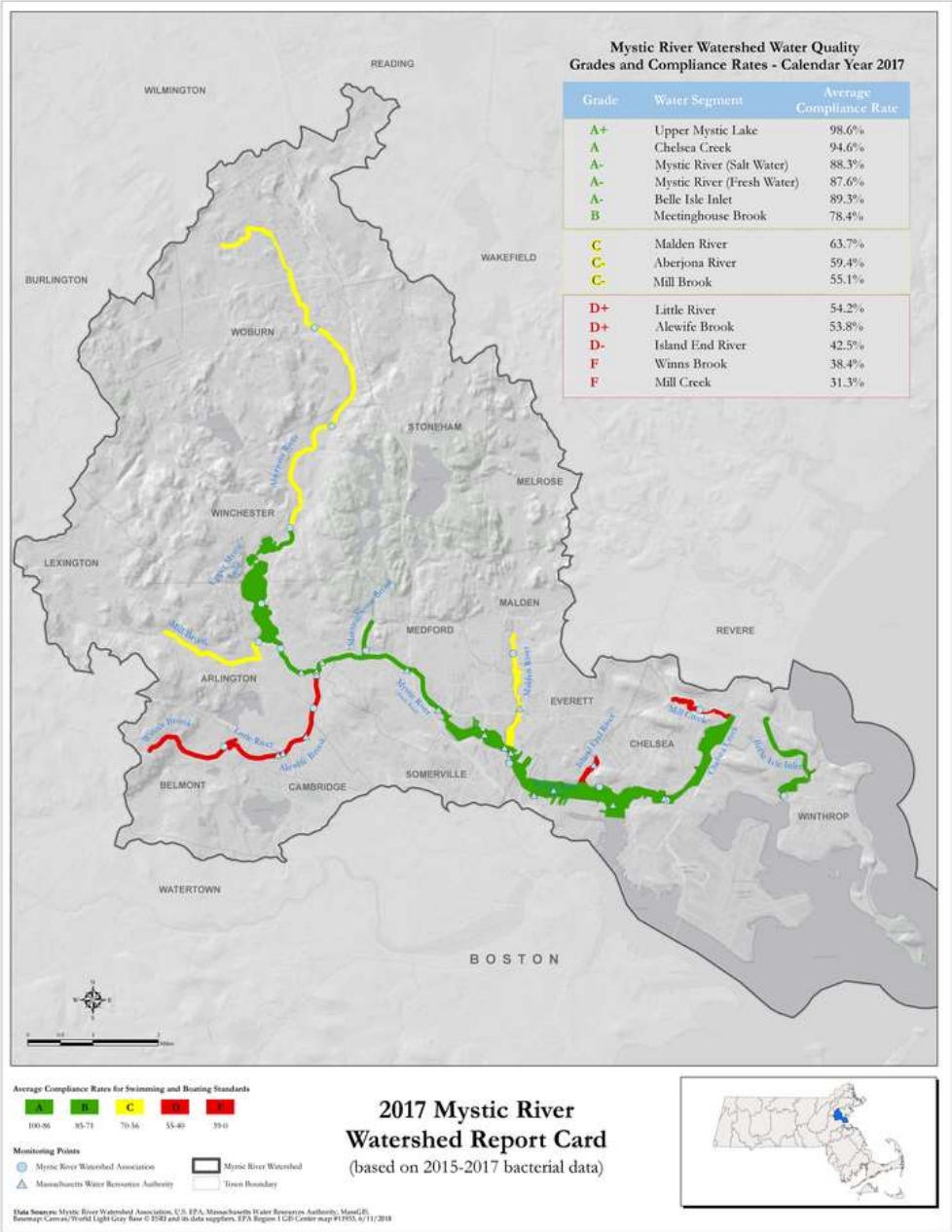

Figure 10: Grades from the 2017 Mystic River Report Card

That said, Chelsea Creek still experiences water quality issues, many of which are the result of combined sewer overflows (CSOs). Combined sewers service approximately 70% of Chelsea. Under normal conditions, combined sewers transport waste to Deer Island Treatment Plant for treatment and discharge.[25] But, during heavy rainstorms, the volume of liquids and waste can exceed capacity of the CSO, resulting in the discharge of untreated wastewater and debris in specified waterbodies, creating

[25] City of Chelsea. 2018. Annual Combined Sewer Overflow Press Release & Report. Online at: https://www.chelseama.gov/public-works/news/annual-combined-sewer-overflow-press-release-report.

water quality issues. The EPA has provided Chelsea with a permit to discharge this overflow from the following CSOs:

- CHE 003 - Located on Winnisimmet Street, discharging to Chelsea Creek
- CHE 004 - Located on Pearl Street, discharging to Chelsea Creek
- CHE 008 - Located on Eastern Avenue, discharging to Chelsea Creek[26]

Discharge volumes are variable each year and are heavily associated with precipitation events and the locations of each CSO. For example, the estimates developed using the MWRA InfoWorks sewer system model suggested that, in 2015, CHE003 did not activate, CHE004 activated three times, releasing a total of 551,935 gallons, and CHE008 activated 13 times, releasing a total of 1,181,189 gallons[27]. In 2013, only CHE004 activated, though it activated six times, releasing a total of 256,500 gallons[28].

Additionally, two CSOs in East Boston discharged into the creek and impact the water quality, as indicated in Table 3, with "modeled activation frequency" referring to the number of times that the model indicates the CSO would have been activated.

Table 3: East Boston CSO Modeled Activations[29]

Outfall	BOS014				BOS013			
Year	2017	2016	2015	2014	2017	2016	2015	2014
Modeled activation frequency	5	2	1	2	5	2	1	2

[26] *Ibid*.

[27] City of Chelsea. 2016. Combined Sewer Overflow Calendar Year 2015 Annual Report. Online at: https://www.chelseama.gov/sites/chelseama/files/pages/annual_report_2016.pdf.

[28] City of Chelsea. 2014. Combined Sewer Overflow Calendar Year 2013 Annual Report. Online at: https://www.chelseama.gov/sites/chelseama/files/uploads/chelsea_annual_cso_report_-_calendar_year_2013.pdf.

[29] Massachusetts Water Resources Authority. 2014-2017. CSO Discharge Estimates and Rainfall Analyses. Online at: http://www.mwra.com/cso/annualdischargeestimates.html.

Figure 11: CSO outfalls which discharge into Chelsea Creek

Chelsea is currently working towards separating combined storm-drains and sewers to reduce the amount of untreated sewage that is discharged from the CSOs during high volume precipitation events, which will reduce activation frequency and volume, thereby improving water quality.[30]

The City also has an overall impervious cover of 75% and very little green space. Because of this, Chelsea Creek receives stormwater inputs containing urban contaminants from runoff in Chelsea, East Boston, Revere, and Everett.[31] Stormwater discharges within Chelsea are regulated under Phase II of the NPDES MS4 permit by the EPA and the Chelsea Department of Public Works.

Additionally, plastic bottles, paper/wrapper material, and cigarette butts are commonly found near the Creek.[32] This litter and trash can be washed or blown into the Creek and become marine debris, which has been shown to impact water quality. While the direct impact of marine debris on Chelsea's waterways has not been tested, research has shown that harmful chemical compounds can leach from marine debris (primarily plastic), thereby impacting water quality[33].

[30] City of Chelsea. 2018. Annual Combined Sewer Overflow Press Release & Report. Online at: https://www.chelseama.gov/public-works/news/annual-combined-sewer-overflow-press-release-report.

[31] Charles River Watershed Association, Mystic River Watershed Association, and Chelsea Collaborative. 2013. Urban Green Infrastructure in Mystic River Communities, Subwatershed Plan for Broadway, Chelsea, MA. Online at: https://static1.squarespace.com/static/563d6078e4b0396c216603c8/t/563e151ee4b0f5552f678830/1375112525085/ChelseaSubwatershedPlan2013_Final.pdf.

[32] *Ibid.*

[33] National Oceanic and Atmospheric Administration. 2016. 2016 NOAA Marine Debris Program Report, Habitat. Online at: https://marinedebris.noaa.gov/sites/default/files/publications-files/Marine_Debris_Impacts_on_Coastal_%26_Benthic_Habitats.pdf.

Image: Trash and debris near the piling fields in Chelsea Creek at 215 Marginal Street

It should be noted that while Chelsea's industrial presence provides regional benefits, these industries in turn expose local residents to a range of environmental pollutants.[34] Specifically, Chelsea residents have high rates of lead poisoning, cancer, asthma, and cardiovascular disease[35], likely in part as a result of poor environmental conditions. Additionally, Chelsea residents are considered an environmental justice population, meaning that they are most at risk of being unaware of or unable to participate in environmental decision-making or to gain access to state environmental resources.[36] These residents are also often considered a more vulnerable population, as Chelsea has a large amount of poverty, immigrants, and racial diversity.

In March of 2014, the Environmental Protection Agency (EPA) conducted an Environmental Justice Analysis focused on communities that may be affected by the permitting of seven Chelsea River bulk petroleum storage facilities[37]. This analysis identified and addressed, as appropriate, any disproportionately high and adverse environmental or human health effects caused by EPA issuing these permits on minority and low-income populations.[38] The concerns received during this analysis were considered and, where allowable by law, addressed through terms and conditions in the draft NPDES permits.[39] The results of the analysis can be found here: https://www3.epa.gov/region1/npdes/chelseacreekfuelterminals/pdfs/ChelseaBulkTerminalEJA.pdf.

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[34] Dooling, Shannon. 2017. Hit First and Worst: Region's Communities of Color Brace for Climate Change Impacts. WBUR. Online at: http://www.wbur.org/news/2017/07/26/environmental-justice-boston-chelsea.

[35] Bongiovanni, R. 2017. How We Are Transforming Contaminated Land into Natural Oasis through Community Engagement. Online at: https://www.nrpa.org/blog/how-we-are-transforming-contaminated-land-into-natural-oasis-through-community-engagement/.

[36] Environment Justice Policy of the Massachusetts Executive Office of Environmental Affairs.

[37] The seven fuel facilities and their NPDES numbers are: Chelsea Sandwich, LLC (MA0003280); Gulf Oil Limited Partnership (MA0001091); Global REVCO Terminal, LLC (MA0003298); Irving Oil Terminal (MA0001929); Global Petroleum Corp., Inc. (MA0003425); Global South Terminal, LLC (MA0000825) Sunoco Logistics East Boston Terminal (MA0004006).

[38] Environmental Protection Agency. Environmental Justice Analysis in Support of the National Pollutant Discharge Elimination System (NPDES) Permits for the Chelsea River Bulk Petroleum Storage Facilities. Online at: https://www3.epa.gov/region1/npdes/chelseacreekfuelterminals/pdfs/ChelseaBulkTerminalEJA.pdf.

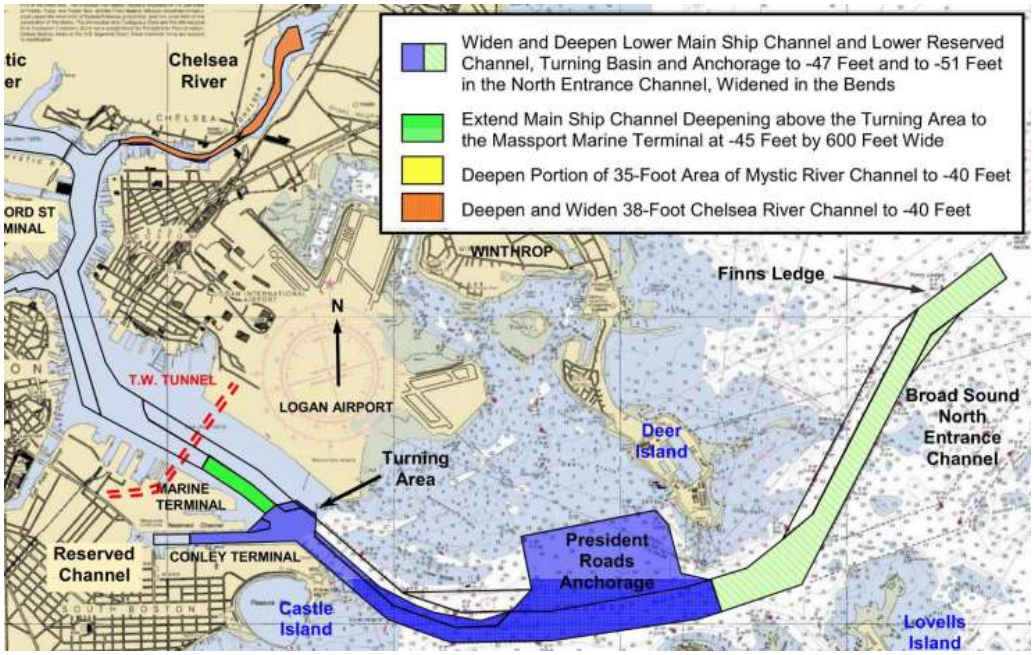
[39] *Ibid*.

4.4 Dredging

Chelsea Creek is a 1.8 mile highly engineered river lined with industrial uses. The Creek and the related water-dependent activities are an important piece of the regional economy. Chelsea Creek primarily serves commercial needs in Chelsea, East Boston, and Revere and has been experiencing an increase in traffic over the past several years[40]. A recent study estimated that 46% of the traffic in Boston Harbor also utilized Chelsea Creek.[41]

The United States Army Corps of Engineers (USACE) last dredged Chelsea Creek in 2012, with the dredged area extending from the General Andrew P. McArdle Bridge to the end of Chelsea Creek. The channel is currently 38 feet deep and approximately 225-250 feet wide from the McArdle Bridge to the Chelsea Street Bridge.[42] From the Chelsea Street Bridge to a point near the creek's end, the channel is 250-430 feet wide.[43] The turning basin at the end of the channel is approximately 800 feet wide and 1,000 feet long.[44] Sedimentation has reduced the depth in parts of the channel and at active berths, requiring additional maintenance dredging to be planned in order to maintain the -38 foot channel.

In the Spring of 2018, the USACE began the Boston Harbor Improvement Project (Figure 13), which is a $123 million dredging project in Boston Harbor that will deepen the channels to accommodate large container ships. This project includes work in the Chelsea River Channel, including the proposed deepening of the existing 38-foot channel to -40 feet MLLW, and widening the Chelsea River Channel in two turns between the bridges along the East Boston Shore (Figure 14).



[40] United States Army Corps of Engineers. Boston Harbor Navigation Project. Online at: http://www.nae.usace.army.mil/Missions/Civil-Works/Navigation/Massachusetts/Boston-Harbor/.

[41] *Ibid*.

[42] *Ibid*.

[43] *Ibid*.

[44] *Ibid*.

Figure 12: Boston Harbor Navigation Improvement Project[45]

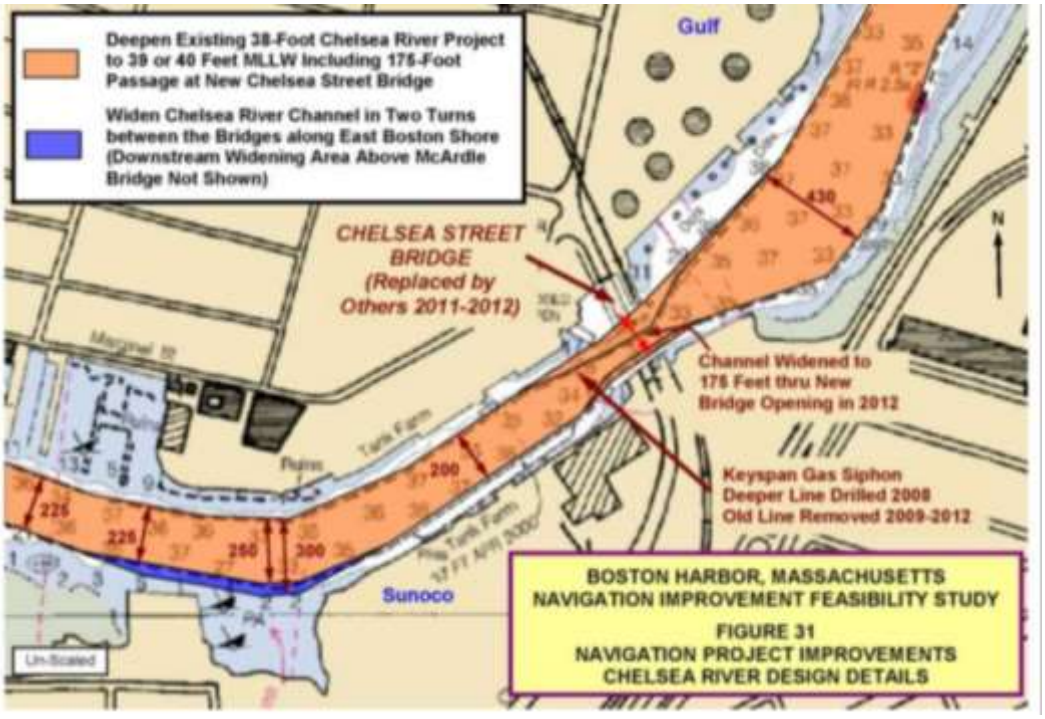


Figure 13: Boston Harbor Navigation Improvement Project, zoomed to Chelsea[46]

Chelsea Creek also has one active Contained Aquatic Disposal (CAD) cell in its waterway. CAD cells are specifically designed holes dug into the harbor floor which are filled with contaminated sediment (normally from dredging work). Chelsea Creek's active CAD cell, C12, was partially filled with contaminated dredge material from the 1998-2001 improvement project and left uncapped. Chelsea Creek also has many approved but unused cell sites and potential areas for additional CAD cells (Figure xx). Dredge spoils were continued to be deposited in the Chelsea Creek CAD cell by MassPort in 2014 from the maintenance dredging of Berth 12 at the Conley Container Terminal in South Boston. "The cell will continue to have capacity, and therefore will not be capped."[47] While the construction of additional CAD cells has been approved in Chelsea Creek, the community views any further construction as an assault on an environmental justice community and strongly urges the disposal of any contaminated materials be done far from Chelsea or any other environmental justice community. Regional burdens should be spread regionally among as many benefitting communities as practical.

[45] Metropolitan Area Planning Council. 2016. A Vision for the Chelsea Waterfront. Online at: ftp://ftp.mapc.org/Chelsea_Waterfront/Chelsea%20Waterfront%20Vision%202016%20Final%20Report.pdf.

[46] MassPORT. Boston Harbor Deep Draft Navigation Improvement Project. Presentation on September 15, 2015. Online at: http://aapa.files.cms-plus.com/BostonNavImprovementProj.pdf.

[47] City of Boston Conservation Commission. April 30, 2014. Public Hearing Meeting Minutes. https://www.cityofboston.gov/images_documents/BCC%20Hearing%20Mins%204-30-14_tcm3-45238.pdf

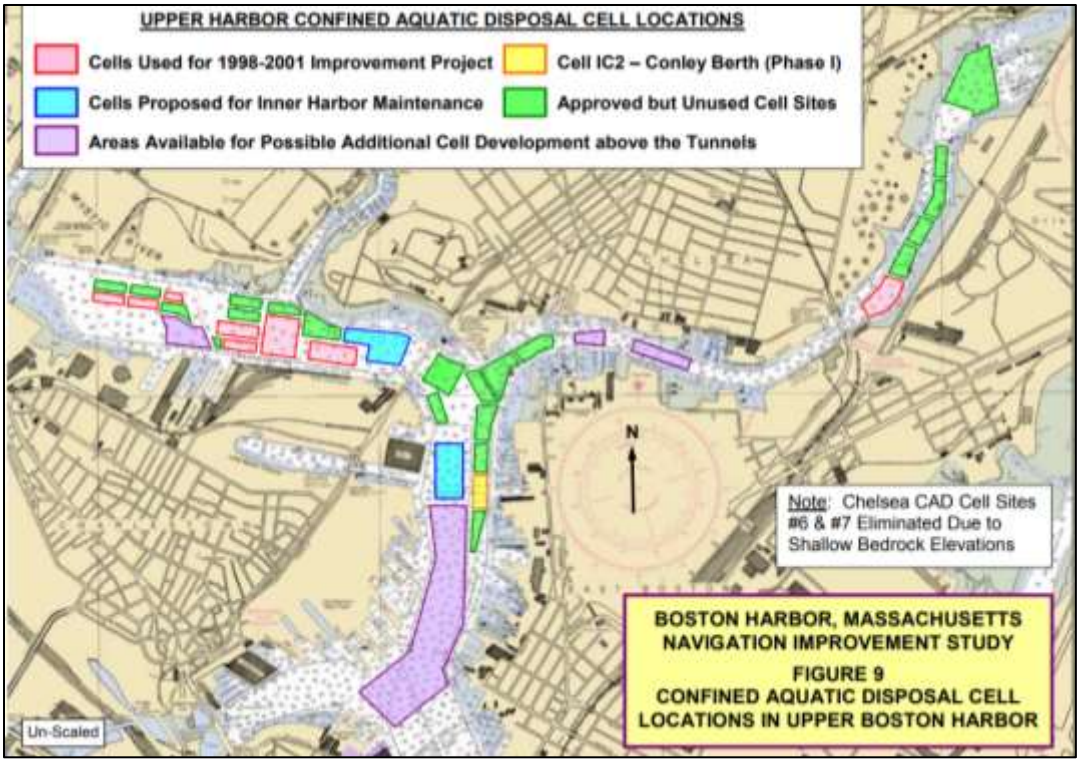


Figure 14: CAD Cell Locations in Upper Boston Harbor[48]

4.5 Transportation

As a large, urban center, the City of Chelsea is served by numerous modes of transportation, including several major roadways, five bus routes (connecting Chelsea with Revere, East Boston, Boston, Everett, and Medford), the MBTA Silver Line SL3-Chelsea bus rapid transit (BRT) service, bus service between surface parking lots and the airport, and one commuter rail route (North Station-Newburyport/Rockport).[49] Chelsea has the greatest proportion of transit-dependent residents in Greater Boston, making public transportation options critical for work and daily life.[50]

[48] MassPORT. Boston Harbor Deep Draft Navigation Improvement Project Presentation. Online at: https://static1.squarespace.com/static/563d6078e4b0396c216603c8/t/585847dcb8a79be1adfbdb8c/1482180577488/Dredge+-+Mystic+RWA+Presentation+6-19-14-for-web.pdf.

[49] City of Chelsea. No date. MBTA Info. Online at: https://www.chelseama.gov/home/pages/mbta-info.

[50] Massachusetts Department of Transportation. No date. Silver Line Gateway: Project Overview. Online at: https://www.massdot.state.ma.us/silverlinegateway/ProjectOverview.aspx.

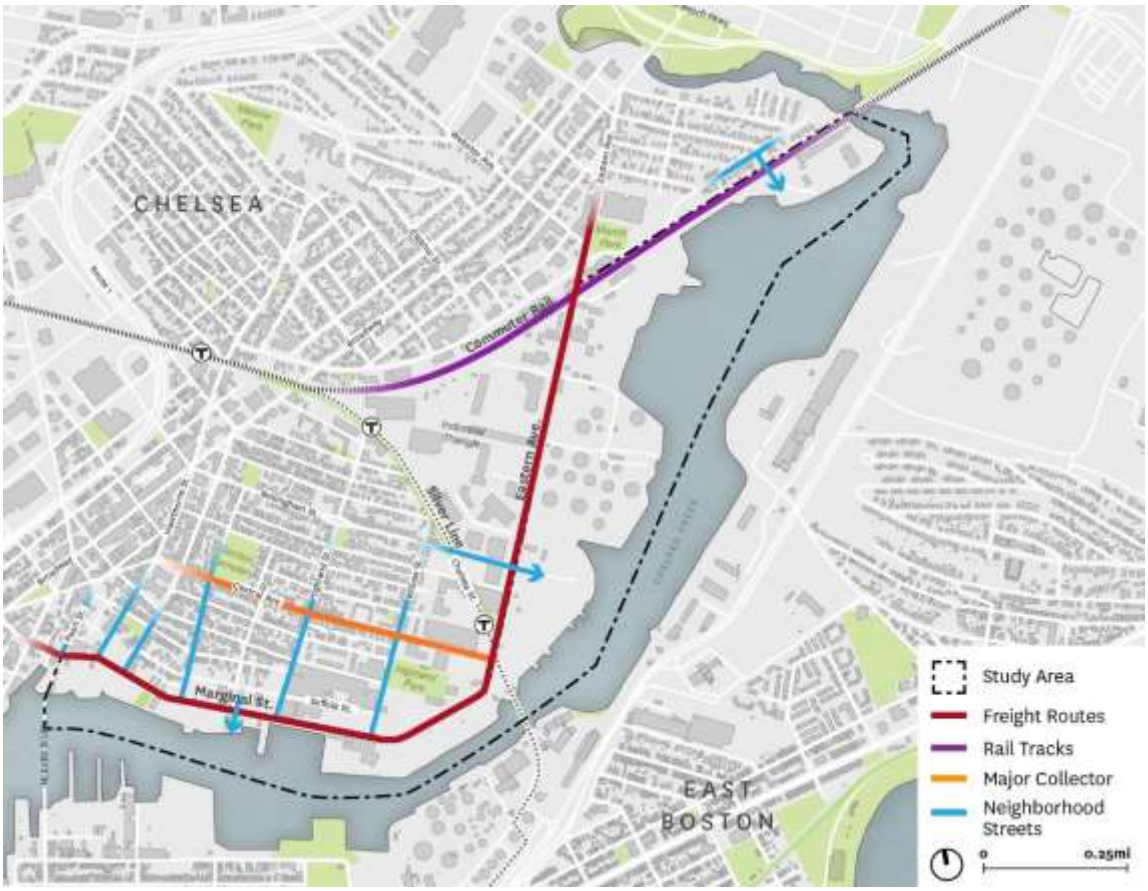


Figure 15: Transportation Features

Bridges and Roadways

Chelsea Street Bridge

Chelsea Street, an urban minor arterial[51], carries traffic between East Boston and Chelsea, crossing the Chelsea Creek via the Chelsea Street Bridge. Upon reaching the Chelsea side of the bridge, Chelsea Street diverges into Marginal Street and Eastern Avenue, both urban minor arterials and designated freight routes, and Central Avenue, an urban major collector, all important travel routes through Chelsea.

The previous bascule bridge was originally constructed in 1936, with several major repairs completed over the years, through the mid-1990s. That bridge offered horizontal clearance of only 96 feet between the fenders protecting the bridge piers, resulting in the creation of a unique class of 90-foot narrow beam tankers known as "Chelsea Class" or "Boston Beam" tankers.[52] Even with a narrower beam, these "Chelsea Class" tankers had only approximately 3 feet on each side transiting the bridge opening,

[51] Massachusetts Department of Transportation. No date. Road Inventory. Online at: http://gis.massdot.state.ma.us/maptemplate/roadinventory/.

[52] White, S. 2012. Improving the Waterway While Using the Waterway: The Chelsea Street Bridge Replacement Project. Presentation at the 2012 Joint Conference of Harbor Safety Committees and Area Maritime Security Committees. Online at: http://onlinepubs.trb.org/onlinepubs/conferences/2012/HSCAMSC/Presentations/8-White.pdf.

creating a precarious navigational situation. As a result of the vessel size restrictions caused by the Chelsea Street Bridge, the Chelsea Creek navigation channel was never widened to the width of 225 feet as authorized by the 1962 Rivers and Harbors Act.[53]

In 1992 the U.S. Coast Guard declared the Chelsea Street Bridge an "unreasonable obstruction to navigation" and issued an Order to Alter the bridge configuration.[54] Adequate funding for the bridge replacement was not available until 2008 when the Massachusetts Department of Transportation and the Federal Highway Administration secured funding through a combination of federal funding under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) and state funding.[55]

After several years of construction to remove the old, structurally-deficient bascule bridge, the replacement bridge opened in 2012 as a new, 400-foot span vertical lift bridge, with two vehicular travel lanes in each direction.[56] When fully open, the new bridge provides a navigable waterway opening 200 feet wide and 175 high, though for safety reasons, vessels transiting the Creek are still limited In size to a roughly 90 foot beam and a maximum length of just over 660 feet. Protected pedestrian walkways are provided on either side of the bridge with right angle connections to the sidewalks. There are no accommodations for bicycles.

The bridge opens on demand at all times for marine traffic as required by US Coast Guard regulations.[57] When closed, the bridge provides a clearance of 7 feet above mean higher high water and 17 feet above mean lower low water.[58]

The waterway upstream of this bridge is used primarily by commercial oil tankers and barges carrying petroleum products and being towed to and from terminal facilities. The tankers prefer high tide and daylight in order to transit the river due to safety concerns (*e.g.*, lighting and fendering), limiting the number of preferred opportunities for safe passage on any given day. Complicating matters, there is a limited but critical fuel supply stored at these upstream facilities that is vital to the region. As a result, the bridge and its openings serve an important and necessary role in maintaining this essential fuel supply.

Boston Towing & Transportation is the primary marine towing company operating in Boston Harbor, with a fleet of approximately eight tug boats. Due to the high demand for the limited number of

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[53] U.S. Army Corps of Engineers. 2011. Maintenance Dredging of the 38-Foot Deep Navigation Channel in the Vicinity of the Chelsea Street Bridge, Chelsea and Boston, Massachusetts. Online at: http://www.nae.usace.army.mil/portals/74/docs/Navigation/ChesleaChannel31May11.pdf.

[54] White, S. 2012. Improving the Waterway While Using the Waterway: The Chelsea Street Bridge Replacement Project. Presentation at the 2012 Joint Conference of Harbor Safety Committees and Area Maritime Security Committees. Online at: http://onlinepubs.trb.org/onlinepubs/conferences/2012/HSCAMSC/Presentations/8-White.pdf.

[55] *Ibid.*

[56] Massachusetts Department of Transportation. 2012. Chelsea Street Bridge Opens. Online at: https://blog.mass.gov/transportation/massdot-highway/chelsea-street-bridge-opens/.

[57] Chelsea River, 33 C.F.R. §117.593, 2018.

[58] Drawbridge Operation Regulations; Chelsea River, Chelsea and East Boston, MA. 78 Fed. Reg. 34 at 11747 (February 20, 2013). Online at: https://www.federalregister.gov/documents/2013/02/20/2013-03883/drawbridge-operation-regulations-chelsea-river-chelsea-and-east-boston-ma.

tugboats, it is common for tugboats assisting vessels in Chelsea Creek to leave one at a time and as quickly as possible, in order to provide services elsewhere in the Harbor. As a result, the Chelsea Street Bridge is often raised and lowered multiple times in succession as each tugboat travels downstream. This approach to the management of the tug fleet maximizes the utilization of each individual tug and profit for the towing company, but causes a significant cost externality to the public and other enterprises. An analysis of bridge lift statistics from June 2017-June 2018 by MassDOT, the owner of the bridge, showed that lifts for tugs alone comprised 48% of all bridge openings[59].

On average, the bridge opens between five and six times a day.[60] When bridge openings occur during rush hour, they cause significant commuting delays for Silver Line buses and other vehicles. In addition to the stoppage when the bridge is up, the resulting backups also take time to clear, causing further delays along the roads leading to the bridge and on neighborhood side streets. The petroleum distributors, who require the bridge to open in order to receive their product, are among those hampered as a result of this traffic congestion caused by the frequent bridge openings.

Figure 17 illustrates actual bridge openings over a 40-day period from late August to early October 2018. During this period, the average duration of each bridge opening was 18 minutes, the median opening time was 16 minutes, and there were an average of 5.4 openings per day. Data were collected from the @LoganToChelsea twitter feed, which provides real-time traffic closure notifications about lifts of the Chelsea Street Bridge to the public. Where up or down notifications were missing, the corresponding time was imputed using the average.

[59] Massachusetts Bay Transit Authority and Massachusetts Department of Transportation. 2018. Chelsea Street Bridge Proposed Test Deviation from Regulations presentation.

[60] Massachusetts Bay Transit Authority and Massachusetts Department of Transportation. 2018. Chelsea Street Bridge Proposed Test Deviation from Regulations presentation.

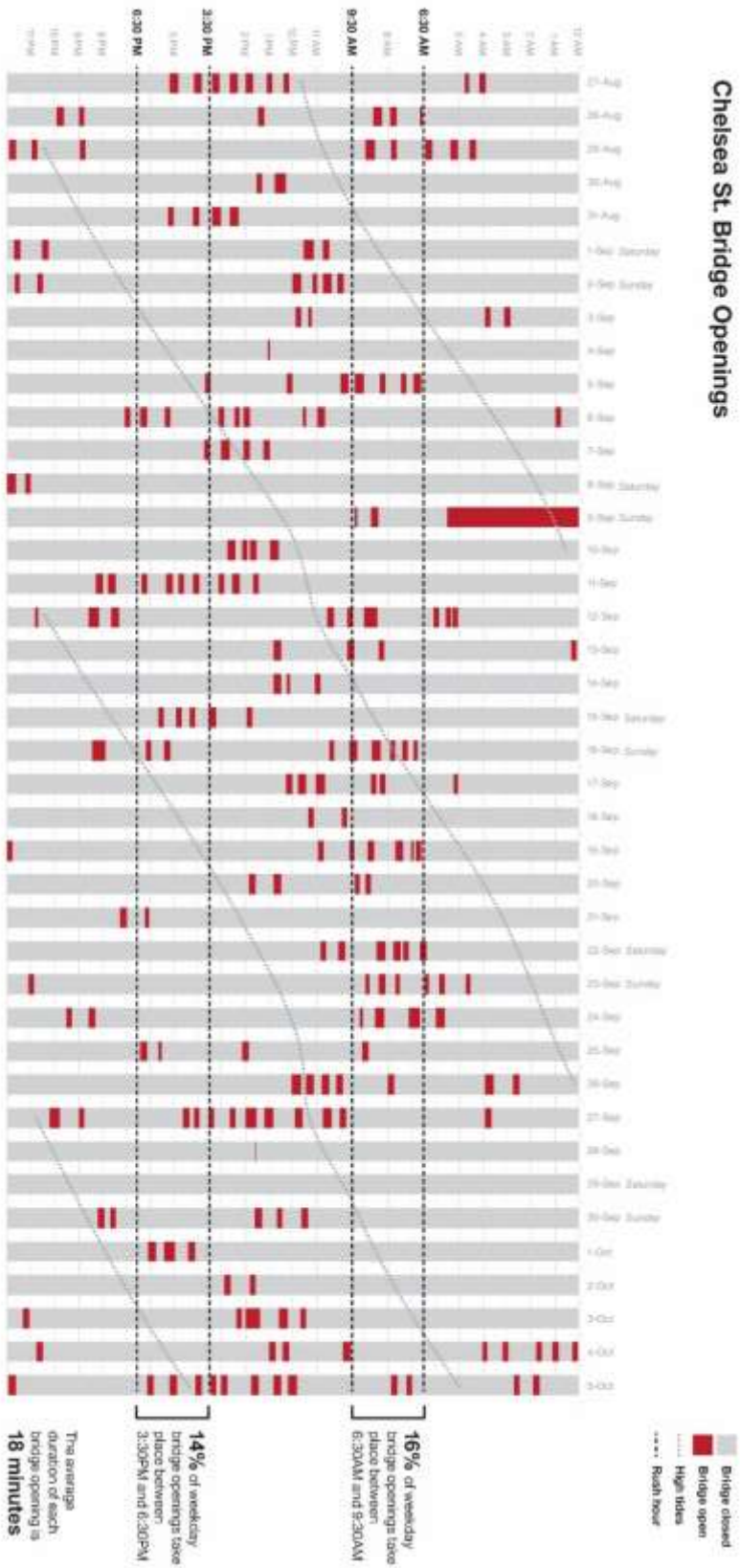

Figure 16: Chelsea Street Bridge Openings - late August to early October 2018

In response to the delays created when the bridge opens, MassDOT and the MBTA created notification systems to warn commuters about the delay and help alleviate traffic congestion. MassDOT implemented a notification system, which uses Intelligent Transportation System (ITS) technology to activate eight roadway signs to read "Chelsea Street Bridge Closed Ahead" when the bridge opens.[61] These eight signs were placed at key locations in Chelsea, East Boston, and Revere to provide drivers with enough time to alter their route if desired.[62] The Massachusetts Port Authority (Massport) also provides real time information about the Chelsea Street Bridge closures via a Twitter account @LoganToChelsea. Notifications are only sent when the road gates are closed however, so there is no advanced warning provided to allow travelers on their way to the bridge to select an alternate route.

In a related effort, the MBTA implemented a software system that the Chelsea Street Bridge operator will use to notify the MBTA bus dispatch center when the bridge is opening.[63] The software will estimate the projected travel times for two potential detours around the bridge and send those estimates to the bus dispatch center, which then will determine the best route for each bus.[64] The MBTA Bus Operations Division is developing a Standard Operating Procedure for diverting SL3 route buses during a bridge opening.[65]

Given the traffic challenges associated with opening the Chelsea Street Bridge, the Massachusetts Department of Transportation is in the process of proposing a test deviation from existing regulations. The proposal, made to the Coast Guard, will recommend weekday restrictions to bridge openings during two-hour windows in the morning and evening rush hours, and weekend restrictions once a day around noon, again for a two-hour period. The restrictions would apply from late March through mid-September 2019 to maximize daylight hours while avoiding the peak oil demand season, and exceptions would be made for storms and states of emergency. If approved, the Massachusetts Department of Transportation will gather and evaluate data during the test deviation in order to determine whether or not to seek a permanent regulation change.[66]

Another potential means by which to reduce the need for bridge openings during rush hour is to improve fendering on the bridge that would potentially allow for the nighttime transit of tankers on the Creek. Fendering improvements could be costly and difficult to permit, and would likely require financial contributions from the maritime users of the Creek.

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[61] Massachusetts Department of Transportation. 2017. New Chelsea Street Bridge Driver Notification System. Online at: https://blog.mass.gov/transportation/massdot-highway/new-chelsea-street-bridge-driver-notification-system.

[62] *Ibid.*

[63] Daniel, S. (2018, March 16). MBTA to implement new software system to avert Chelsea Street Bridge. *Chelsea Record*. Online at: http://www.chelsearecord.com/2018/03/16/mbta-to-implement-new-software-system-to-avert-chelsea-street-bridge/.

[64] *Ibid.*

[65] *Ibid.*

[66] Fichter, K. December 6, 2018. Personal communication.

Andrew P. McArdle Memorial Bridge (Meridian Street Bridge)

The McArdle Bridge crosses Chelsea Creek and connects Meridian Street in East Boston with Pearl Street in Chelsea, both urban principal arterials.[67] It is a split rolling bascule bridge 1,075 feet long and 44 feet wide, with one travel lane in each direction. When open, the bridge provides a vertical clearance of 157 feet above mean high water.[68] When closed, the bridge provides a vertical clearance of 21 feet above mean higher high water and 30 feet above mean lower low water.[69] Like the Chelsea Street Bridge, the McArdle Bridge also opens on demand at all times for marine traffic as required by US Coast Guard regulations.[70] The waterway is used primarily by commercial vessels, such as tankers, tugboats, and barges. Vessels traveling upstream in Chelsea Creek from Boston Harbor must first pass under or through the McArdle Bridge before reaching the Chelsea Street Bridge.

Similar to the Chelsea Street Bridge, commuting delays are also created when the McArdle Bridge opens for marine traffic. Although the Silver Line bus route does not use the McArdle Bridge, MBTA Bus Routes 116 and 117 do cross the bridge. As a result, both bus passengers and vehicle drivers are impacted by the closure of this bridge.

On December 31, 2014, a woman who was walking across the McArdle Bridge was crushed to death as the bridge closed.[71] Operational changes as a result of this accident require the bridge operator to walk the bridge to ensure that it is free of pedestrians.[72] While desperately needed, this new protocol adds additional delays for traffic navigating the bridge.

The McArdle Bridge is owned by the City of Boston and is in need of maintenance repairs. Boston has budgeted $500,000 in FY2019 and $2,500,000 in fiscal years 2020-2023.[73] The Federal Highway Administration's National Bridge Inventory rated the condition of the McArdle Bridge as poor based upon an inspection in November 2016 with a structural integrity rating of "[b]asically intolerable requiring high priority of replacement", with a projected cost of $34,286,000.[74]

Roadway Improvements

In addition to serving as travel routes for Chelsea residents and visitors, Marginal Street and Eastern Avenue serve as important freight distribution corridors for the bulk commodities that arrive by vessel

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[67] Massachusetts Department of Transportation. No date. Road Inventory. Online at: http://gis.massdot.state.ma.us/maptemplate/roadinventory/.

[68] American Bridge Wiki. No date. Online at: http://americanbridge.wikia.com/wiki/Andrew_P._McArdle_Memorial_Bridge.

[69] Urban Harbors Institute, University of Massachusetts Boston; Apex Companies, LLC.; Tufts University; and Ramboll. 2017. Massachusetts Offshore Wind Ports & Infrastructure Assessment: Existing Conditions Report: 148 Condor Street (former Hess Oil co.), Boston, MA. Online at: http://files.masscec.com/Condor%20Street%20former%20Hess%205-15-17.pdf.

[70] Chelsea River, 33 C.F.R. §117.593 2018.

[71] Excite News, AP. Jan 1, 2014. http://apnews.excite.com/article/20140101/DAB1NKEO1.html

[72] Boston Globe. Feb 22, 2014. https://www.bostonglobe.com/metro/2014/02/22/operators-must-now-walk-east-boston-drawbridge-before-raising/JOR4DtWMWlGcSKsdXI5RJP/story.html

[73] City of Boston. No date. https://budget.boston.gov/capital-projects/public-works-department/mcardle-bridge/

[74] http://bridgereports.com/1234922

on Chelsea Creek. The City has begun several initiatives to improve these multi-use streets. The City currently has a consultant engaged in developing a new pavement marking plan for Marginal Street. In addition, a feasibility study for improvements to the right-of-way is being proposed in the 2019 Capital Improvement Plan.

The City also is currently working on its Complete Streets Prioritization Plan which will be completed in the spring of 2019. Corridors such as Marginal Street, Eastern Avenue, and Central Avenue have been identified as important elements in developing a connected network of infrastructure for pedestrians and cyclists as well as vehicles.

Intersection of Chelsea Street, Eastern Avenue, and Central Avenue

The current intersection of Chelsea Street, Eastern Avenue, and Central Avenue on the Chelsea side of the Chelsea Street Bridge creates several layers of transportation challenges. Although this intersection was recently redone, it was not designed to prioritize Silver Line bus service and is also heavily used by MassPort and InterPark shuttle buses. In addition, the intersection does not safely and effectively accommodate pedestrians and bicyclists. As noted previously, when the Chelsea Street Bridge is up and closed to vehicles, traffic backs up in all directions on the main streets and continues into the side streets of the surrounding neighborhood. Further, two lanes of traffic must merge into a single turning lane from Marginal Street onto the bridge. Once the bridge reopens to vehicles, the process to clear the traffic jam can be chaotic with frustrated drivers competing for space as they drive onto the bridge.

Silver Line

Silver Line Gateway Project

The Silver Line Gateway Project is designed to expand and improve public transportation in Chelsea. This project aims to reduce traffic congestion and crowding on Chelsea city buses and provide a direct route to subway lines, the Seaport, and South Station.[75]

Phase One consisted of expanding the Silver Line dedicated bus rapid transit (BRT) service route to four new Silver Line stations in Chelsea at Eastern Avenue, Box District, Bellingham Square (at Arlington Street), and Chelsea (at Everett Avenue) on a new dedicated busway, and replacement of the Washington Avenue Bridge.[76] Opened in April 2018 and operating 60-foot high-capacity buses, the new Silver Line 3-Chelsea (SL3-Chelsea) route originates at South Station and follows the existing route through the Seaport District and Ted Williams Tunnel, before providing a new connection to the Blue Line at Airport Station in East Boston, and then continuing to the four new Chelsea stations.

Phase Two consists of converting the existing Chelsea Commuter Rail Station into the Bellingham Square (Downtown Chelsea) Silver Line station and the building of a new, fully-accessible Chelsea Commuter Rail Station at a new location adjacent to the Mystic Mall at Everett Avenue and the terminus of the Silver Line.[77] This new Commuter Rail Station will have intermodal connections with the nearby Chelsea

[75] Massachusetts Bay Transit Authority. 2018. New Silver Line 3-Chelsea Service Between Chelsea and South Station. Online at: https://www.mbta.com/news/2018-03-12/new-silver-line-3-chelsea-service-between-chelsea-and-south-station.

[76] Massachusetts Department of Transportation. No date. Silver Line Gateway: About This Project. Online at: http://www.massdot.state.ma.us/silverlinegateway/Home.aspx.

[77] *Ibid*.

Silver Line Bus Rapid Transit Station. Other improvements include new traffic signals where the busway intersects with city streets and an updated railroad signal system.[78] Intelligent Transportation System (ITS) equipment will be added to all grade crossings in Chelsea with the exception of the signal at the Chelsea Street Bridge. ITS will prioritize bus traffic through these intersections.

Phase Three, the Chelsea Greenway, is being advanced by the City of Chelsea, in coordination with MassDOT and the Massachusetts Executive Office of Energy and Environmental Affairs, and consists of a shared-use bike and pedestrian pathway between Chestnut Street in downtown Chelsea and Eastern Avenue.[79] The Greenway will continue on-road to Everett Avenue.

Daily bus commuters on local routes take trips that may require several transfers to travel from Chelsea and East Boston to downtown Boston.[80] In 2014, the MBTA reported average weekday total ridership of the bus routes running through Chelsea as approximately 25,000 riders.[81] The expanded SL-3 Chelsea bus route will give Chelsea residents an additional connection to jobs, businesses, neighborhoods, and opportunities throughout the area, including a simplified and direct connection to downtown Boston and the Seaport District, one of the largest job growth locations in the region.[82] At the same time, the expanded SL-3 Chelsea bus route and the adjacent Greenway also allow greater access to the Chelsea waterfront for both residents and visitors, for both work and recreation. One-seat connections will be available from Chelsea to both North and South Stations. This improved public transportation will likely be an appealing feature for businesses and will help encourage new types of development and associated new jobs on the waterfront. It will provide the ability for a workforce to more easily commute to the waterfront and increase the number of visitors who would enjoy waterfront public access amenities.

While every new transit option is a welcome improvement in a highly transit-dependent community such as Chelsea, the reality of the new Silver Line 3 has created significant challenges in addition to its many benefits. These challenges stem from delays introduced by openings of the new Chelsea Street Bridge and the congestion in the Ted Williams Tunnel. These factors often result in unpredictable commute times leading to a late arrival at work that are difficult for any worker and may not be tolerated in many businesses, particularly those employing blue-collar and hourly workers. There is concern by some within the community that the new Silver Line route will lead to gentrification. Further work is required to devise mechanisms for mitigating these commuting delays and for prioritizing Silver Line buses through the intersections on both sides of the Chelsea Street Bridge. Silver Line ridership in Chelsea has been increasing since its opening in April 2018, particularly during workdays.

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[78] Massachusetts Department of Transportation. No date. Silver Line Gateway: Design & Construction. Online at: http://www.massdot.state.ma.us/silverlinegateway/DesignConstruction.aspx.

[79] *Ibid.*

[80] Massachusetts Bay Transit Authority. 2018. New Silver Line 3-Chelsea Service Between Chelsea and South Station. Online at: https://www.mbta.com/news/2018-03-12/new-silver-line-3-chelsea-service-between-chelsea-and-south-station.

[81] MBTA. 2014. Ridership and Service Statistics, 14th Edition. Online at: https://archives.lib.state.ma.us/bitstream/handle/2452/266319/ocm18709282-2014.pdf.

[82] *Ibid.*

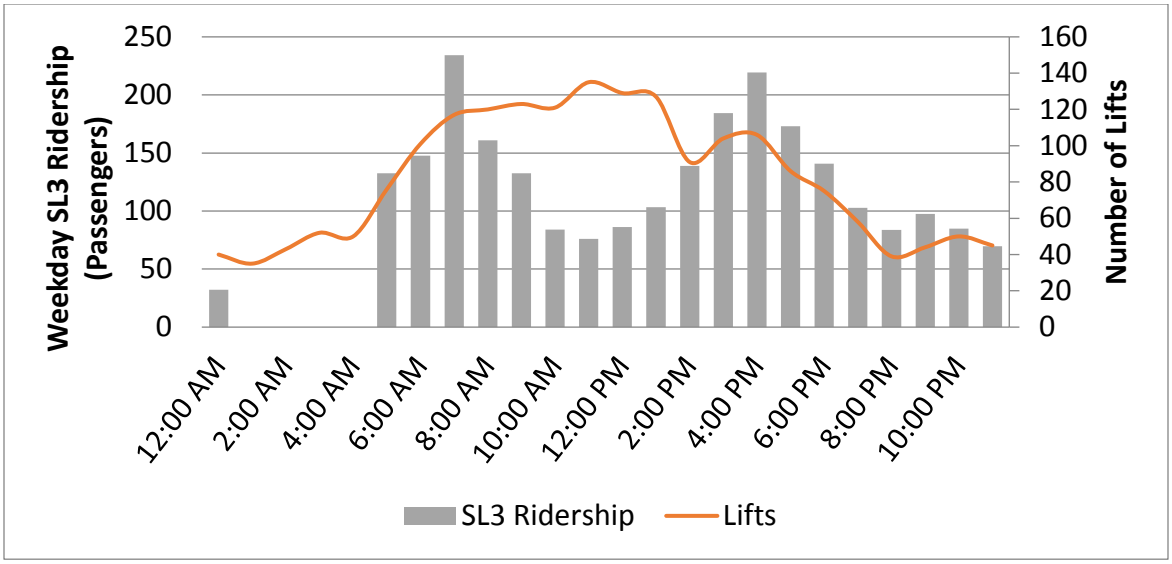

Figure 17: Weekly SL3 ridership data and bridge openings

Vessel-Based Transportation

The majority of vessels using Chelsea Creek are engaged in the transportation of bulk cargo, with little recreational vessel use. Liquid petroleum products are transported by tankers and stored in several tank farms along Chelsea Creek. As described in the section on the Chelsea Street Bridge, the old bridge limited the size of these tankers to "Chelsea Class" vessels, which were at most 90 feet wide and 661 feet long and held approximately 275,000 barrels of petroleum.[83] The promise of the new bridge and the associated dredging projects was to allow the "Chelsea class" vessels to be phased out and a larger class of vessels, with greater economies-of-scale and fewer trips and associated bridge openings, to carry petroleum products upstream. To date, this has not occurred and "Chelsea Class" vessels and barges are still being used. The other major bulk cargo transported on Chelsea Creek is salt, carried by cargo ships that can hold up to 50,000 tons of material.[84] The salt is transported to Eastern Salt, Co. from mines in various locations, including Chile, Mexico, and Ireland.[85]

In addition to the commercial vessel activity on the Chelsea-side of the Creek, the East Boston side of the Creek also experiences heavy usage, with regular fuel deliveries to the Sunoco oil terminal and the Global and Irving terminals. Due to the narrow width of the Creek at the Sunoco facility, other vessels are not allowed to pass when a vessel with a beam of 60.5 feet or more is berthed at that facility, further complicating the timing of activity at other locations on the Creek[86].

Though Boston Harbor dredging will allow for safe passage of Panamax vessels (measuring 110 feet in width, 41.2 feet in depth, and 1,050 in length) in the Harbor, it is unlikely that these vessels will ever be able to travel the length of Chelsea Creek, given the depth and width restrictions on the Creek.

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[83] Kelley, S. No date. Photographs of Chelsea Creek. Online at: http://users.rcn.com/scott.kelley/gallery.html.

[84] Cook, G. 2015. Where does Boston's road salt come from? A local photographer finds out. Online at: http://www.wbur.org/artery/2015/01/27/boston-road-salt.

[85] *Ibid.*

[86] David Cox. December 5, 2018. Personal communication.

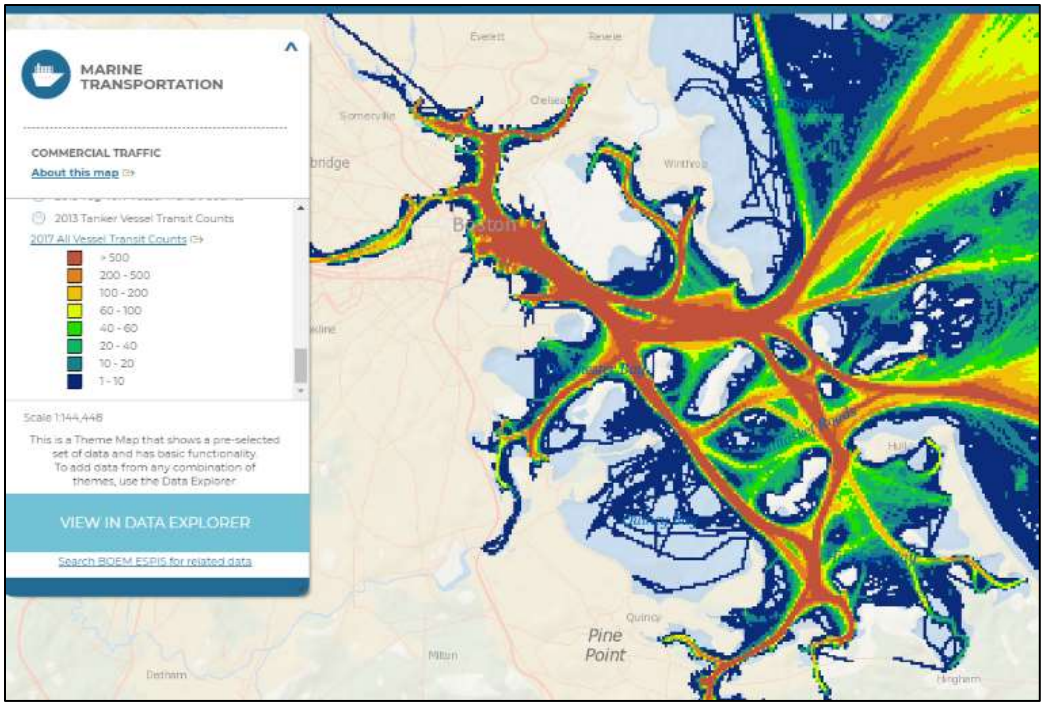

Figure 18: Density of Commercial Traffic in Boston Harbor and Chelsea Creek in 2017. Source: Northeast Ocean Data Portal.

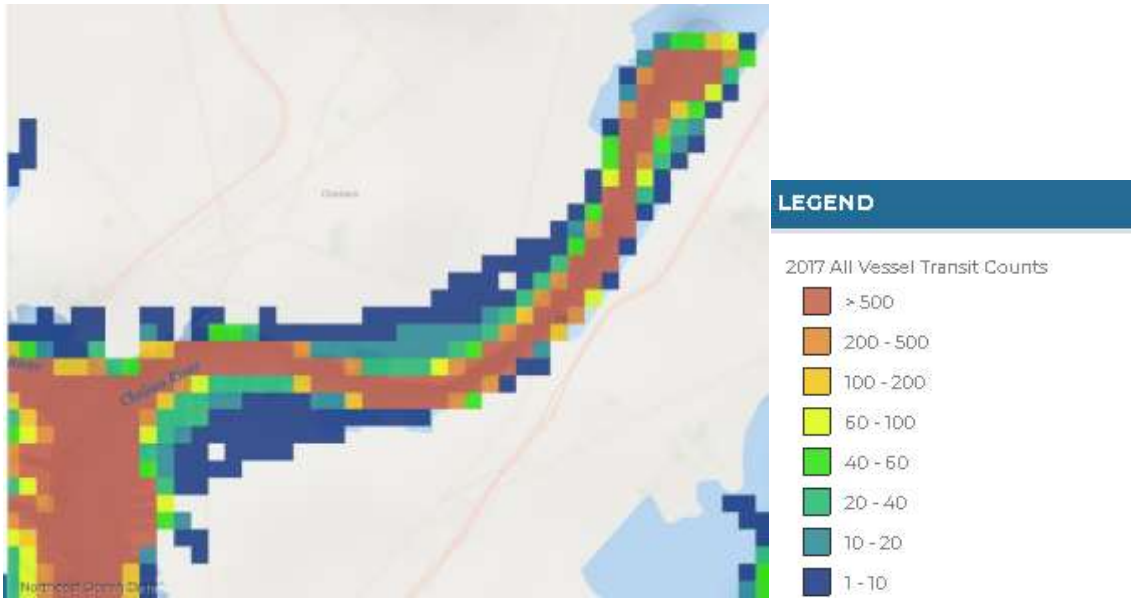

Figure 19: Vessel Traffic Density in Chelsea Creek - 2017[87]

MBTA Railroad Bridge

To be determined. The City is waiting for the MBTA to provide documentation on the state of the railroad crossing of Mill Creek at the northernmost end of the DPA for inclusion in this plan.

[87] Map developed using the Northeast Ocean Data Portal: https://www.northeastoceandata.org/.

4.6 State of Shore-side Infrastructure

As part of the Municipal Harbor Management Plan and Designated Port Area Master Plan, the type(s) and general condition(s) of shore-side infrastructure were observed and documented for a number of parcels within the planning area (see Appendix H).

The findings suggest that portions of the waterfront at 1 Forbes Street, 111 Eastern Avenue, 215 Marginal Street, and 245-257 Marginal Street will likely require improvements due to concerns such as potential structural failure, upland subsidence, observed corrosion and sinkholes (see Figure 19 for a map showing street addresses).

In addition, the report notes some minor loss of fill under the roadway near 215 Marginal Street, and the need to demolish in-water structures in front of 111 Eastern Avenue and 215 Marginal Street.

In keeping with the intent of land uses within a DPA, it is important that repairs to and maintenance of shore-side infrastructure within the DPA are undertaken in a manner that will support water-dependent industrial uses. For example, rip rap such as that found along 239 Marginal Street is typically inconsistent with the needs of water-dependent industrial users.

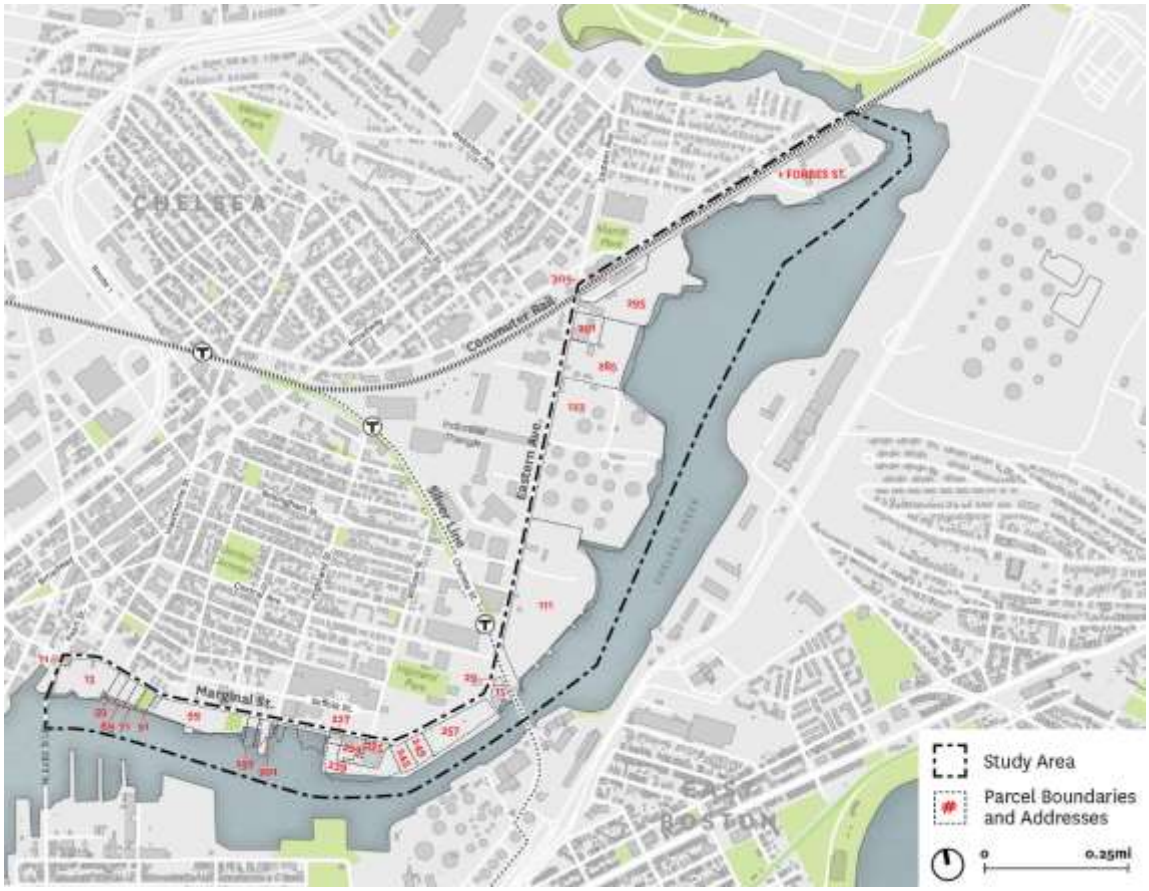

Figure 20: Addresses of Properties in the Planning Area

4.7 Regulatory Conditions

A complex suite of state, federal, and municipal regulations applies to the topics identified in this plan, as described below. See Section 3.3 Regulatory Framework for additional information about these regulatory and planning processes.

Federal Laws and Regulations

National Flood Insurance Program (NFIP), 42 U.S.C. §4011 et seq.

This Federal Emergency Management Agency (FEMA) program seeks to reduce the impact of flooding on both new and improved private and public structures by providing insurance to property owners, renters, and businesses, and by encouraging communities to adopt and enforce floodplain management regulations.[88] In an effort to reduce the socio-economic impacts of disasters, FEMA promotes the purchase and retention of general risk insurance, including flood insurance for property owners located in floodplains.[89] The NFIP produces Flood Insurance Rate Maps (FIRMs), official maps of a community that outline special hazard areas and flood plain risk zones.[90]

The most recent FIRMs for Chelsea, produced in 2016, show that portions of the waterfront are located in the "1-percent annual chance floodplain", also called the "100-year floodplain". (See the chapter on climate change for more information and figures). The "100-year floodplain" does not mean a flood will occur once every 100 years, but instead designates a flood of a certain intensity that has a 1-percent chance of occurring or being exceeded each year. Such a flood could occur more than once in a short timeframe or not occur for many years. The probability of a property being inundated by a 100-year flood over a thirty year period is 26%.[91] In 2018, there were three storms that could be characterized as 100-year events.

The NFIP Floodplain Management Requirements are minimum standards required by FEMA for communities to participate in the NFIP.[92] These standards ensure that new development does not cause increased flooding in other areas and also that new buildings will be protected from base flood levels. See the section on Zoning for information about the City of Chelsea's Floodplain Overlay District, which includes regulations regarding development in the floodplain.

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[88] FEMA. 2018. The National Flood Insurance Program. Online at: https://www.fema.gov/national-flood-insurance-program.

[89] *Ibid.*

[90] FEMA. 2018. Flood Insurance Rate Map (FIRM). Online at: https://www.fema.gov/flood-insurance-rate-map-firm.

[91] FiveThirtyEight. August 30, 2017. It's Time To Ditch The Concept Of '100-Year Floods'. https://fivethirtyeight.com/features/its-time-to-ditch-the-concept-of-100-year-floods/. This number is derived using probability theory. First, we calculate the probability of there not being a flood over a 30-year period. Since for each year, there is a 99 percent chance of there not being a flood, the chance that there is no flood over 30 years is 74 percent (or .99^30). The probability of a house in a 100-year floodplain being inundated at least once, then, is just the complement, so 26 percent.

[92] FEMA. No date. NFIP Floodplain Management Requirements. Online at: https://www.fema.gov/pdf/floodplain/nfip_sg_unit_5.pdf.

Ports, Waterways and Coastal Security (PWCS)[93]

The Homeland Security Act of 2002 divided the Coast Guard's eleven statutory missions between homeland security and non-homeland security.[94] The Act delineated Ports, Waterways and Coastal Security (PWCS) as the first homeland security mission and the Coast Guard designated PWCS as the service's primary focus alongside search and rescue.[95]

The PWCS mission is to protect U.S. marine transportation waterways and their users from terrorist attacks, sabotage, espionage, and other subversive acts on vessels, critical infrastructure, and key resources, and to respond to acts that do occur. PWCS activities include employment of awareness activities; counterterrorism, antiterrorism, preparedness and response operations; and the establishment and oversight of a maritime security regime.

In Chelsea, the Coast Guard escorts "ships deemed to present or be at significant risk" and enforces "fixed security zones at maritime critical infrastructure" by monitoring the arrival and departure of oil tankers, for the security of both the vessels and local populations.

Rivers and Harbors Act of 1899

This Act gave the U.S. Army Corps of Engineers (USACE) the authority to regulate and protect navigable waters from obstructions in development, construction, and excavation, including dredging to maintain and improve channels for waterway navigation and commercial transportation.[96] Under Section 10, USACE has approval authority over the construction of any structure in or over any navigable water of the United States, or any work affecting the course, location, condition, or capacity of such waters. Activities that require a Section 10 permit include structures, such as piers, wharfs, breakwaters, bulkheads, jetties, and transmission lines, and work, such as dredging, disposal of dredged material, excavation, and filling.

The Act also authorizes the USACE to establish pierhead and bulkhead lines, beyond which no pile structures (piers, wharves, bulkheads) may extend and no solid fill may be placed, unless otherwise approved.

Clean Water Act of 1972 (CWA), 33 U.S.C. 1251 et seq.

The CWA establishes the regulatory structure for regulating the discharge of pollutants into the waters of the United States and regulating water quality standards for surface waters.[97] The declaration of goals and policy for the CWA states in part:

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[93] Homeland Security Act of 2002, Pub. L. No. 107-296, 116 Stat. 2135, enacted November 25, 2002.

[94] United States Coast Guard. Office of Counterterrorism & Defense Operations Policy. Online at: https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Response-Policy-CG-5R/Office-of-Counterterrorism-Defense-Operations-Policy-CG-ODO/PWCS/.

[95] *Ibid.*

[96] US Army Corps of Engineers. No date. A Brief History. Online at: https://www.usace.army.mil/About/History/Brief-History-of-the-Corps/Environmental-Activities/.

[97] Environmental Protection Agency. No date. Summary of the Clean Water Act. Online at: https://www.epa.gov/laws-regulations/summary-clean-water-act.

SEC. 101. (a) The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. In order to achieve this objective it is hereby declared that, consistent with the provisions of this Act—

(1) it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985;

(2) it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983;

(3) it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited;

In particular, this second policy reflects the Clean Water Act's goal to achieve water quality that creates "fishable and swimmable waters."

CWA Section 404 establishes a permit program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands.[98] The USACE enforces environmental regulation through public interest review of permits under Section 404, while the Environmental Protection Agency (EPA) develops policy and guidance for permit evaluation and also reviews and comments on individual permit applications.

The Act also created the National Pollution Discharge Elimination System (NPDES), a permit program designed to address water pollution by regulating point sources that discharge pollutants into waters of the United States.[99] Under the program, EPA authorizes states to perform many of the permitting, administrative, and enforcement actions of the NPDES program, while EPA maintains its oversight responsibility.[100] The NPDES program regulates various categories of pollution sources, including stormwater. One of the stormwater point sources regulated under the NPDES program is municipal separate storm sewer system (MS4). Operators of MS4s may be required to obtain a specific MS4 permit before discharging stormwater. Chelsea is creating a plan to fully separate all remaining combined sewer infrastructure.

Federal Coastal Zone Management Act of 1972 (CZMA), 16 U.S.C. 1451 et seq.

The CZMA created the National Coastal Zone Management Program which is a partnership between the federal government and coastal states to balance the competing demands of coastal resource use, economic development, and conservation. Massachusetts created the Massachusetts Office of Coastal Zone Management (CZM) as the primary agency to implement the state coastal zone management (MCZM) program, which received federal approval in 1978. It is a networked program in which state programs incorporate the MCZM policies into their regulatory reviews, plans, and programmatic decisions.

In recognition of Massachusetts' established history of maritime industry and trade and the importance of working waterfronts to all water-dependent commerce, Massachusetts CZM established the

[98] Environmental Protection Agency. No date. Section 404 Permit Program. Online at: https://www.epa.gov/cwa-404/section-404-permit-program.

[99] EPA. 2018. National Pollution Discharge Elimination System. Online at: https://www.epa.gov/npdes/about-npdes.

[100] *Ibid.*

Designated Port Area (DPA) program, discussed under state laws and regulations below. The DPA regulations implement CZMA policies, which are further defined and described in the MCZM program.

Federal Consistency Review

By receiving federal approval of its coastal zone management plan, Massachusetts (and other states) gained the authority to conduct "federal consistency review" oversight over federal actions that may impact the land or water resources or uses of the Massachusetts coastal zone.[101] Federal consistency requires that federal actions, within and outside the coastal zone, which have reasonably foreseeable effects on any coastal use (land or water) or natural resource of the coastal zone be consistent with the enforceable policies of a state's federally approved coastal management program. Federal actions subject to consistency review include license or permit activities and financial assistance activities.

National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 et seq.

NEPA establishes a broad framework for protecting the environment. It requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions.[102] These proposed federal actions include making decisions on permit applications, adopting federal land management actions, and constructing highways and other publicly-owned facilities.[103] Federal agencies must assess the likely impact of their selected action and alternative courses of action through an Environmental Assessment (EA)/Finding of No Significant Impact (FONSI) or Environmental Impact Statement (EIS).[104]

State Laws and Regulations

Chapter 91 – The Massachusetts Public Waterfront Act

Massachusetts' principal tool for the protection and promotion of water-dependent uses of its tidelands and other waterways is M.G.L. Chapter 91 (Public Waterways Act, 1866). Chapter 91 and the waterways regulations (310 CMR 9.00) are administered by the Waterways Regulation Program of the Massachusetts Department of Environmental Protection (DEP).

The statute and regulations ensure that tidelands—both presently flowed and previously filled—are utilized only for water-dependent uses or otherwise serve a proper public purpose that provides greater public benefit than detriment to the rights of the public in tidelands. The regulations promote water-dependent use of the shoreline; preserve and promote public access; and encourage local involvement in Chapter 91 licensing decisions through Municipal Harbor Plans, which provide harbor-specific guidance to the regulatory decisions of DEP under Chapter 91. Regulations at 301 CMR 23.00 govern the development and approval of Municipal Harbor Plans.

Section One of the Chapter 91 waterways regulations also distinguishes between private tidelands and Commonwealth tidelands, as follows:

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[101] Mass Office of Coastal Zone Management. 2003. Environmental Permitting in Massachusetts. https://www.mass.gov/files/documents/2017/01/oj/ma-env-permit-guide-2003.pdf.

[102] EPA. 2017. What is the National Environmental Policy Act. Online at: https://www.epa.gov/nepa/what-national-environmental-policy-act.

[103] *Ibid.*

[104] EPA. 2017. National Environmental Policy Act Review Process. Online at: https://www.epa.gov/nepa/national-environmental-policy-act-review-process.

> ''Commonwealth tidelands'', tidelands held by the commonwealth in trust for the benefit of the public or held by another party by license or grant of the commonwealth subject to an express or implied condition subsequent that it be used for a public purpose.
>
> ''Private tidelands'', tidelands held by a private party subject to an easement of the public for the purposes of navigation and free fishing and fowling and of passing freely over and through the water.

Commonwealth tidelands include all land seaward of mean low water and are held in trust by the state for the public.[105] Private tidelands are the area between mean low and mean high tide.[106] Although private tidelands may be privately owned, they are nonetheless subject to the Public Trust Doctrine, under which the public retains the rights to fish, fowl, and navigate and the natural derivatives thereof in this intertidal area.[107]

Authorization is generally required for any fill, structure, or use in tidelands, including any changes of use and structural alterations in a previously licensed structure. Types of structures include: piers; wharves; floats; retaining walls; revetments; pilings; and waterfront buildings (if located on filled lands or over water). Authorization typically comes in the form of a Chapter 91 license. Prior to January 1, 1984, licenses were not termed but could be revoked by the Commonwealth at any point. Licenses issued after January 1, 1984 are generally for terms of 30 years and cannot be revoked unless there is noncompliance. An applicant can petition for a longer license term, for up to 99 years. Licenses for municipalities and public agencies are entitled to un-termed licenses. Licenses on private land can only be made permanent and irrevocable by an act of the legislature.

In July 2018, the Massachusetts Appeals Court ruled in Commercial Wharf East Condominium Association vs. Boston Boat Basin, LLC that private parties have no authority to seek judicial enforcement of public trust rights through private litigation. "Only the Commonwealth, 'or an entity to which the Legislature has delegated authority expressly, may act to further public trust rights.'"[108] Therefore, only the Department of Environmental Protection has the authority to enforce issues arising from conditions of Chapter 91 permits.

Through a locally-prepared harbor plan, a municipality has the ability to "substitute" local standards for certain state Chapter 91 requirements such as building height limits and setbacks, providing offsets that ensure that the effectiveness of the Waterways regulations are being promoted equally or with greater effectiveness as a result of the substitution. Further, a municipality may "amplify" certain discretionary state standards, for example, by creating design and use standards for areas/parcels. The provisions of a Municipal Harbor Plan can also be effective in providing guidance for DEP in applying the numerous *discretionary* requirements of the Chapter 91 regulations to projects under review.

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[105] Massachusetts Department of Environmental Protection. 2018. Chapter 91 Frequently Asked Questions. Online at: https://www.mass.gov/guides/chapter-91-frequently-asked-questions.

[106] *Ibid.*

[107] *Ibid.*

[108] Justia US Law. 2018. https://law.justia.com/cases/massachusetts/court-of-appeals/2018/17-p-355.html

Massachusetts Coastal Zone Management Program (MCZM)

The Massachusetts Coastal Zone Management Program was first approved by the National Oceanic and Atmospheric Administration in April 1978. The MCZM program seeks to balance the impact of human activities with the protection of coastal and marine resources through planning, public involvement, technical assistance, research, and sound resource management. It is a "networked" program in which the state's coastal policies are directly applied within other state statutory and regulatory authorities, including the Massachusetts Environmental Policy Act, the Public Waterfront Act (Chapter 91), the Review and Approval of Municipal Harbor Plan Regulations, and Wetlands Protection Act.

Designated Port Areas

To promote and protect water-dependent industrial uses, the Commonwealth of Massachusetts has established 10 Designated Port Areas (DPAs), including the Chelsea Creek DPA[109], and is one of four DPAs in the immediate Boston Harbor area, as shown in Figure 20.

Figure 21: Boston Harbor DPAs

[109] Massachusetts Office of Coastal Zone Management. No date. CZM Port and Harbor Planning Program – Designated Port Areas. Online at: https://www.mass.gov/service-details/czm-port-and-harbor-planning-program-designated-port-areas.

The Chelsea Creek DPA covers the entire water area of the Chelsea River from the Andrew P. McArdle Bridge upstream to the MBTA rail crossing and the adjacent waterfronts of Chelsea, East Boston, and Revere. This DPA Master Plan covers just the land and water portions of the Chelsea Creek DPA within the City of Chelsea's municipal boundaries.

DPAs have particular physical and operational features that are important for (1) water-dependent industrial uses, such as commercial fishing, shipping, and other vessel-related marine commercial activities, and/or (2) manufacturing, processing, and production activities that require marine transportation or need large volumes of water for withdrawal or discharge.[110]

DPAs are land and water areas with the following characteristics: (1) a waterway and associated waterfront that has been developed for some form of commercial navigation or other direct utilization of the water; (2) backland space that is conducive in both physical configuration and use character to the siting of industrial facilities and operations; and (3) land-based transportation and public utility services appropriate for general industrial purposes.[111] Given the unique requirements for water-dependent industrial uses, Massachusetts policy seeks to preserve and enhance the capacity of the DPAs to accommodate such uses and prevent significant impairment by non-industrial or non-water-dependent types of development, which have fewer unique requirements and therefore a far greater range of siting location options.[112]

Project proposals within DPAs are reviewed by MassDEP under the specific standards of the Chapter 91 regulations, 310 CMR 9.00. To help guide the decisions of MassDEP, municipalities prepare plans for their DPAs as a component of their Municipal Harbor Plan in accordance with regulations at 301 CMR 23.00.

Massachusetts Wetlands Protection Act (MGL Chapter 131, Section 40)

The Massachusetts Wetlands Protection Act protects wetlands and the public interests they serve, including flood control, prevention of pollution and storm damage, and protection of public and private water supplies, groundwater supply, fisheries, land containing shellfish, and wildlife habitat.[113] The Chelsea Conservation Commission administers the Wetlands Protection Act by implementing regulations found at 310 CMR 10.00. Any project or activity that will remove, fill, dredge, or alter a wetland resource (stream, river, creek, pond, lake, and the banks associated with them, meadows, marshes, swamps, bogs, any land under water, land subject to flooding) or involves work within the 25-foot riverfront protection area or the 100-foot buffer zone associated with a wetland resource area requires a permit from the Commission. Land subject to flooding includes all of the areas identified as potentially subject to inundation in the FEMA flood maps. MassDEP oversee administration of the law, and hears appeals of decisions made by local commissions.

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[110] *Ibid.*

[111] *Ibid.*

[112] *Ibid.*

[113] Massachusetts Department of Environmental Protection. No date. Protecting Wetlands in Massachusetts. Online at: https://www.mass.gov/guides/protecting-wetlands-in-massachusetts.

Massachusetts Environmental Policy Act

After the passage of NEPA, many states, including Massachusetts, established state-level or local environmental review requirements. The Massachusetts Environmental Policy Act (MEPA) requires state agencies to study the environmental consequences of their actions, e.g., permitting and financial assistance, and to take all feasible measures to avoid, minimize, and mitigate damage to the environment.[114] MEPA also requires that state agencies study alternatives to a proposed project and develop mitigation requirements to be used by the permitting agency if a permit is issued.[115] MEPA review itself is not a permitting process; instead, it requires public study, disclosure, and development of mitigation requirements for a proposed project before state permitting agencies take action.[116]

City of Chelsea Zoning

Chelsea's zoning regulations are contained in Chapter 34 of the City of Chelsea's Code of Ordinances. Figure 21 displays a zoning map of the City of Chelsea.

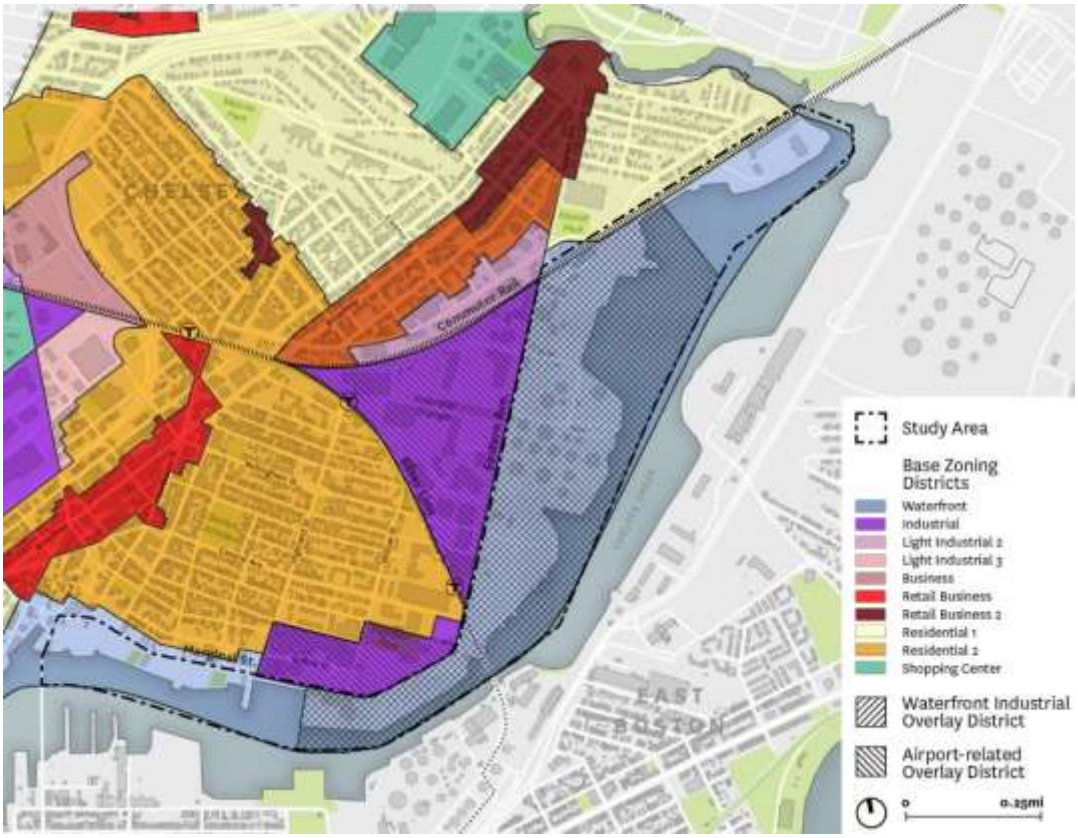

Figure 22: Zoning Base Districts and Overlay Districts

[114] Massachusetts Environmental Policy Act Office. 2018. Purpose and Intent of MEPA. Online at: https://www.mass.gov/service-details/purpose-and-intent-of-mepa.

[115] *Ibid.*

[116] *Ibid.*

Waterfront District (W)[117]

The planning area is entirely within the Waterfront District. The purposes of the W District are:

(1) To provide an area for uses which are water related and/or which benefit from proximity to the airport or the harbor, and
(2) To encourage public access to the waterfront.

Overlay Districts in the Planning Area

The following four overlay districts modify the underlying Waterfront District in the planning area.

Waterfront Industrial Overlay District (WIOD)[118]

The Waterfront Industrial Overlay District (WIOD) covers the majority of the planning area, but does not include the western end of Marginal Street past 227 Marginal Street and does not include the property at 1 Forbes Street. The purposes of the WIOD are:

(1) To promote economic development in the Waterfront (W) and Airport Related Overlay Districts (AROD);

(2) To enhance the working waterfront;

(3) To preserve adequate areas for deepwater shipping and other water dependent industrial uses consistent with the state policy on designated port areas (DPAs);

(4) To allow compatible commercial and general industrial supporting uses in the Waterfront District;

(5) To provide for continuous public access along the water's edge, as appropriate, to, from and within the Chelsea Creek DPA;

(6) To prevent soil and groundwater pollution and to encourage appropriate interim uses consistent with necessary cleanups; and

(7) To allow certain commercial, general industrial and water-dependent industrial uses by special permit to ensure more effective environmental protection.

Airport Related Overlay District (AROD)[119]

The Airport Related Overlay District (AROD) covers the majority of the planning area, but does not include the western end of Marginal Street past 227 Marginal Street and does not include the property at 1 Forbes Street. The purpose of the AROD is to provide areas for airport related uses in locations with suitable access to the airport and where such activities can occur without adverse impact upon residential areas.

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[117] City of Chelsea. No Date. Zoning Ordinances Chapter 34, Sec. 34-27. Online at: https://library.municode.com/ma/chelsea/codes/code_of_ordinances.

[118] City of Chelsea. No Date. Zoning Ordinances Chapter 34, Sec. 34-179 Waterfront Industrial Overlay District (WIOD). Online at: https://library.municode.com/ma/chelsea/codes/code_of_ordinances.

[119] City of Chelsea. No Date. Zoning Ordinances Chapter 34, Sec. 34-180 Airport Related Overlay District (AROD). Online at: https://library.municode.com/ma/chelsea/codes/code_of_ordinances.

Wireless Communication Overlay District (WCFOD)[120]

The Wireless Communication Overlay District (WCFOD) covers the entire planning area, as it includes all zoning districts except for the Residential R1 and Residential R2 Districts. The purposes of the WCFOD are:

> (1) To provide for safe and appropriate siting of wireless communications facilities consistent with the Telecommunications Act of 1996; and
>
> (2) To minimize visual impacts from such facilities on residential districts and scenic areas.

Floodplain Overlay District (FOD)[121]

The Floodplain Overlay District (FOD) covers portions of nearly all properties in the planning area and corresponds with the FEMA 100-Year Floodplain boundary. The purposes of the FOD are:

(1) To ensure public safety through reducing the threats of life and personal injury;
(2) To eliminate new hazards to emergency response officials;
(3) To prevent the occurrence of public emergencies resulting from water quality, contamination, and pollution due to flooding;
(4) To avoid the loss of utility services which if damaged by flooding would disrupt or shut down the utility network and impact regions of the community beyond the site of flooding;
(5) To eliminate costs associated with the response and cleanup of flooding conditions; and
(6) To reduce damage to public and private property resulting from flooding waters.

[120] City of Chelsea. No Date. Zoning Ordinances Chapter 34, Sec. 34-182 Wireless Communications Facilities Overlay District (WCFOD). Online at: https://library.municode.com/ma/chelsea/codes/code_of_ordinances.

[121] City of Chelsea. No Date. Zoning Ordinances Chapter 34, Sec. 34-184 Floodplain Overlay District (FOD). Online at: https://library.municode.com/ma/chelsea/codes/code_of_ordinances.

Chapter 5: Climate Change

Introduction

As a vital engine for sustaining the nation's economy, the northeast is disproportionately exposed to the effects of the changes in our climate. According to the Fourth National Climate Assessment (2018)[122], the northeast region will become increasingly stressed, due to experiencing the impacts of climate change far earlier and at a greater magnitude than other regions. In the northeast, this will be particularly due to sea level rise and the increased frequency and severity of heat events.

An increase in storm frequency, ocean temperatures, ocean acidification, and sea level rise portend a degradation of coastal ecosystems and economies. Regionally, changes in the ocean temperature and acidity will yield unstable fishing conditions and price volatility, hurting New England's fishing sector. Sea level rise and more frequent storms, leading to increased flooding, will damage property and interrupt coastal port operations, depressing economic activity. Due to the region's historic settlement patterns along the coast, as well as its antiquated combined sewer systems, flood events will also lead to negative environmental and public health outcomes, such as increases in coastal pollution.

Increasing temperatures are also a concern for human health. The Fourth National Climate Assessment projects a striking growth of northeastern temperatures which will result in longer, hotter heatwaves in a region predominantly dependent on older housing stock, which retains heat and provides poor ventilation. Coupled with regional carbon emissions, the increase of heat-related events will directly result in harm to local communities, due to an increase in negative public health outcomes, such as asthma and cardiovascular disease.

Collectively, the socioeconomic and spatial impacts of climate change risk exacerbates displacement in coastal cities, such as Chelsea, that are presently grappling with market pressures relative to rapid, luxury development. According to preeminent academic literature, environmental justice communities, such as Chelsea, will disproportionately shoulder the negative effects of climate change.[123] Consequently, the City has prioritized projects and initiatives to strengthen community preparedness and mitigate the realities of flooding, extended heatwaves, and other natural disasters.

Current Conditions and Projected Mapping of Flooding Vulnerability

With approximately 60% of its municipal boundary bordering tidally influenced waterways and low-lying area—on average less than 10 feet above sea level—Chelsea is particularly vulnerable to coastal flooding.[124] Comprising a series of drumlins surrounded by low-lying areas, a sizeable share of the city's land area was developed by filling salt marshes. Sitting at low elevations, these coastal areas are tidally influenced, with high groundwater tables and poorly draining soil. Along the coast, environmental

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[122] **USGCRP**, 2017: *Climate Science Special Report: Fourth National Climate Assessment, Volume I* [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 470 pp., doi: 10.7930/J0J964J6.

[123] EPA, *Climate Change, Health, and Environmental Justice,* 2016. https://www.cmu.edu/steinbrenner/EPA%20Factsheets/ej-health-climate-change.pdf. Accessed 1/6/19.

[124] Stantec, Woods Hole Group, and City of Chelsea. 2017. Designing Coastal Community Infrastructure for Climate Change. Online at: https://www.chelseama.gov/sites/chelseama/files/uploads/20170215_chelsea_va.pdf.

pollution has degraded the remaining marsh areas. As a result, the City lacks the natural ability to alleviate flooding. During precipitation-driven inland flooding events, the city's drainage infrastructure is ill-equipped to handle the excess water in certain locations. During the winter storms of 2018, which occurred simultaneous to high tides, flooding occurred along Beacham St., Williams St., Marginal St., and Eastern Ave., as well as other inland locations. Between January of 1978 and September 20, 2018, the number of property losses reported by the Federal Flood Insurance Program was 27, amounting to a total of $83,549.97 in payments[125]. Overall, the city's vulnerability will continue to increase under present and future climate change conditions.

A recent study developed the Boston Harbor Flood Risk Model (BH-FRM) to assess the effects of climate change on the Central Artery Tunnel System.[126] This dynamic model incorporates increases in water levels; physical processes associated with storm events, e.g., waves, winds, tides, and storm surge; future sea level rise projections; and a range of potential future storm events.[127] This model is also used by other metro-Boston municipalities and state agencies, including the Massachusetts Department of Transportation (MassDOT) and the Massachusetts Port Authority (MassPort).[128]

Coastal Community Resiliency Vulnerability Assessment Maps[129]

The BH-FRM was used to determine which areas of the City are most vulnerable to coastal flooding, including identifying flood pathways where coastal flood waters are likely to flow into the City.[130] These flooding vulnerability assessment maps display data for the present day, 2030, and 2070 time periods and show either the probability of flooding or the depth of flooding.[131] The depth of flooding data are further categorized into a display of flooding depths at the 100-year flood level (1% probability of occurrence each year) and the 1,000-year flood level (0.1% probability of occurrence each year).[132]

Thirty-six percent of Chelsea lies within a flood risk area under present day conditions, 42% in 2030, and 49% in 2070 (as shown in Figure 22).[133] The vast majority of the study area for this Municipal Harbor Plan is included in these flood risk areas under both present and future conditions.

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[125] FEMA. Undated. Policy and Claim Statistics for Flood Insurance. Online at: https://www.fema.gov/policy-claim-statistics-flood-insurance#.

[126] Bosma, K., Douglas, E., Kirshen, P., McArthur, K., Miller, S., and C. Watson. 2015. MassDOT-FHWA Pilot Project Report: Climate Change and Extreme Weather Vulnerability Assessments And Adaptation Options for the Central Artery. Online at: https://www.mass.gov/files/documents/2018/08/09/MassDOT_FHWA_Climate_Change_Vulnerability_1.pdf.

[127] *Ibid.*

[128] *Ibid.*

[129] MassDOT. 2016. Online at: https://www.chelseama.gov/sites/chelseama/files/pages/boston_harbor_model_flood_vulnerability_maps.pdf.

[130] Stantec, Woods Hole Group, and City of Chelsea. 2017. Designing Coastal Community Infrastructure for Climate Change. Online at: https://www.chelseama.gov/sites/chelseama/files/uploads/20170215_chelsea_va.pdf.

[131] *Ibid.*

[132] *Ibid.*

[133] *Ibid.*

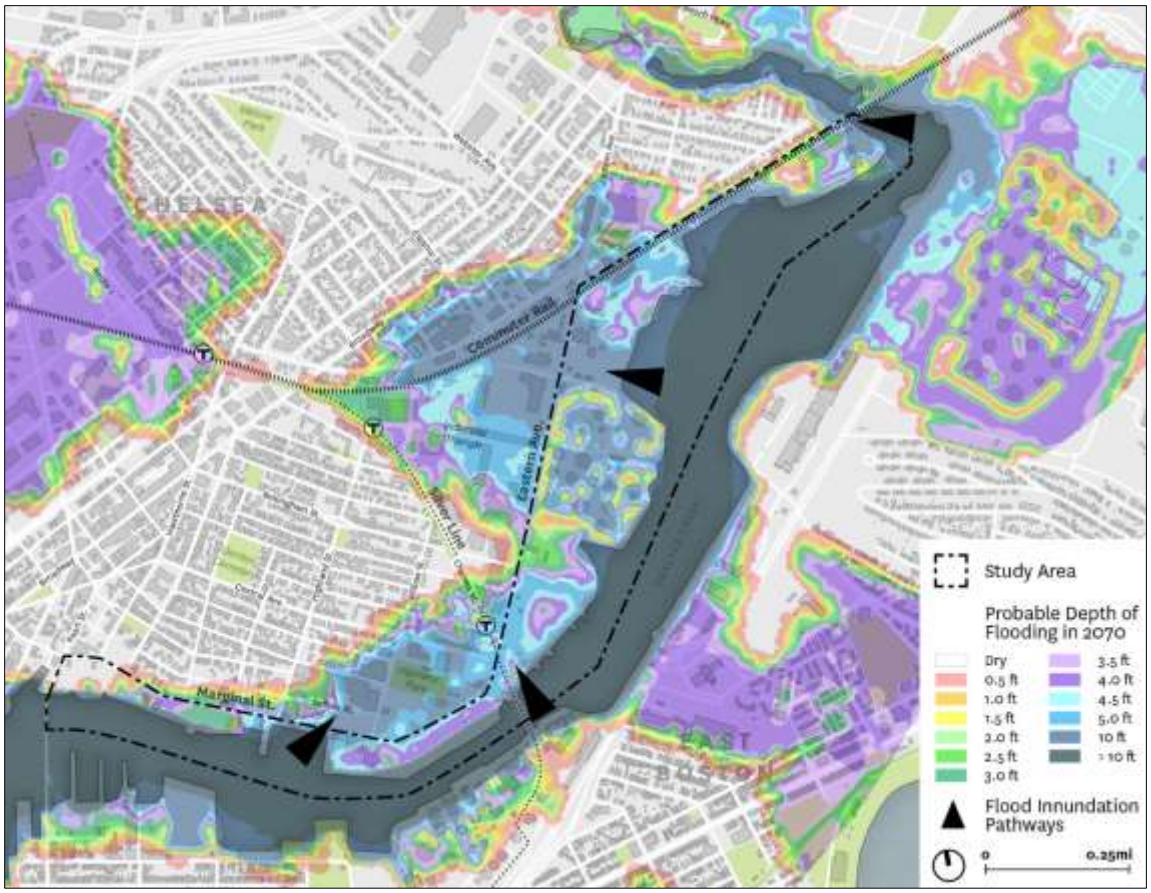

Figure 23: Probable Flooding Depths in 2070[134]

2016 FEMA Flood Maps for Suffolk County[135]

In 2016, the Federal Emergency Management Agency issued newly revised Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS) for Suffolk County, including the City of Chelsea. As mandated by the National Flood Insurance Program (NFIP), the City of Chelsea modified its floodplain regulations in the City Zoning Ordinance to reflect this revised information. Figure 24 below shows the updated 100-year flood zone for Chelsea. Notably, FIRMs depict flood risk by utilizing purely historical information, which does not account for the climactic and hydrological transformation the region is now experiencing, due to climate change. Flood areas are defined based on their history of flooding; data pertaining to sea level rise, local drainage systems, and other environmental conditions are not factored into account. Therefore, the City estimates that the extent and magnitude of inundation events are likely to be greater than what is documented on the Suffolk County FIRMs.

[134] Bosma, K., Douglas, E., Kirshen, P., McArthur, K., Miller, S., & Watson, C. (2015). Climate Change and Extreme Weather Vulnerability Assessments and Adaptation Options for the Central Artery. MassDOT, Boston MA.

[135] FEMA. 2016. Flood Insurance Rate Maps. Online at: https://www.chelseama.gov/sites/chelseama/files/uploads/merged_reduced_file_size.pdf and https://msc.fema.gov/portal/home.

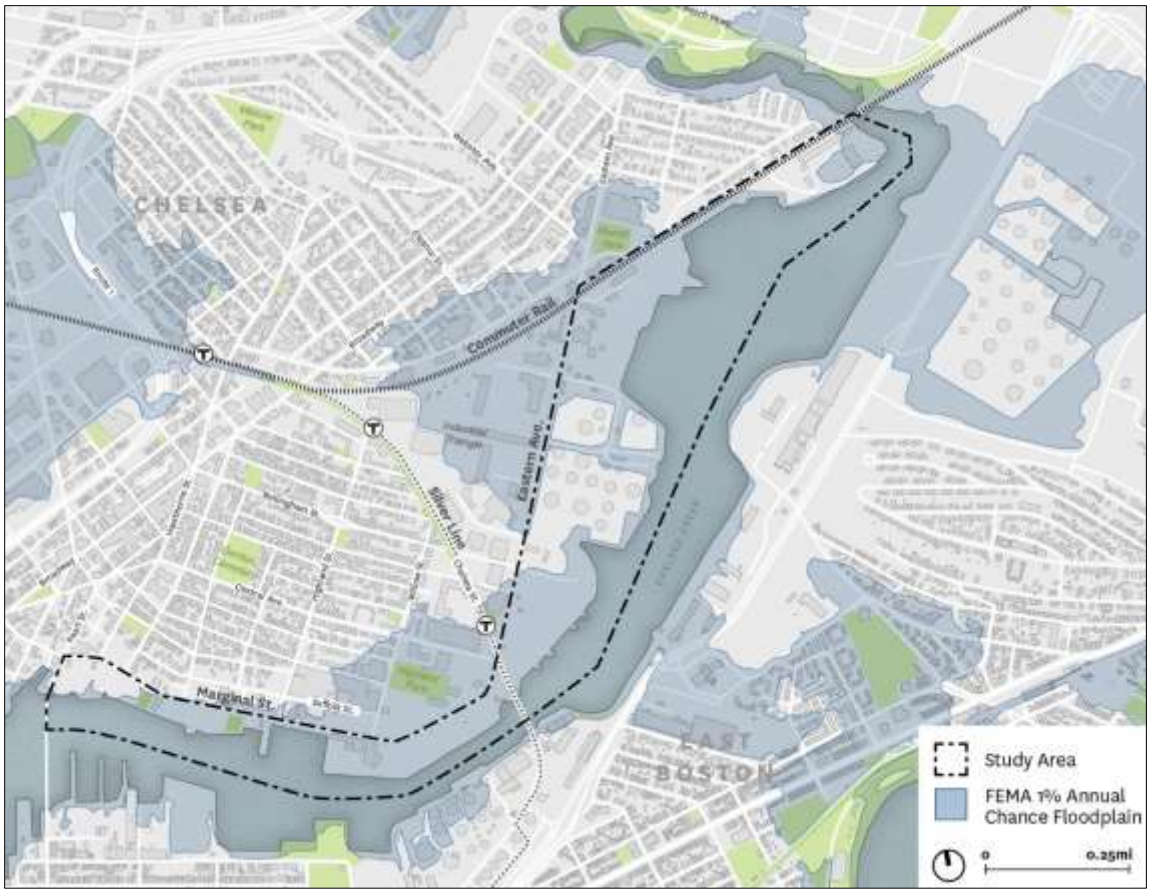

Figure 24: The 100-Year Flood Zone, 2016 FEMA Flood Insurance Rate Maps

City of Chelsea Climate Change Adaptation and Resilience Initiatives

Similar to coastal municipalities throughout the Commonwealth, Chelsea is beginning to prepare for the anticipated impacts of climate change – hotter temperatures, inland flooding, storm surge, and rising sea levels. Over the past several years, the City of Chelsea has conducted and collaborated on many local climate change adaptation and resilience initiatives, including projects undertaken in conjunction with state agencies, neighboring municipalities, the private sector, and community groups. The following is a summary of some of these efforts.

Municipal Vulnerability Preparedness (MVP) Program

The Municipal Vulnerability Preparedness (MVP) Program[136] provides grants to municipalities in Massachusetts to encourage them to begin planning for climate change resiliency and implementing priority projects. State funding allows communities to complete vulnerability assessments and develop action-oriented resiliency plans. Through the planning process, communities learn to define extreme weather and natural and climate related hazards, understand how their community may be impacted by climate change, identify existing and future vulnerabilities and strengths, develop and prioritize community actions, identify opportunities to reduce risk and build resilience, and implement key actions

[136] Massachusetts Executive Office of Energy and Environmental Affairs. No date. Municipal Vulnerability Preparedness (MVP) Program. Online at: https://www.mass.gov/municipal-vulnerability-preparedness-mvp-program.

identified through the planning process.[137] Communities who complete the MVP program are certified as MVP communities and are then eligible for various opportunities, including MVP Action grant funding.

In May 2018 Chelsea completed a community-based planning workshop led by the Metropolitan Area Planning Council (MAPC) and GreenRoots as part of the MVP program. Participants learned about Chelsea's climate risks including issues such as sea level rise, flooding, heat islands, and vulnerable populations; discussed options for resilience; and identified priority actions the City should take to be more prepared for climate change. The final report summarized the information reported by workshop participants including identification of top hazards and vulnerable areas, current strengths and assets, and top recommendations to improve resilience.[138]

Climate Change Vulnerability Assessment

Through the FY16 Coastal Community Resilience Grant Program, the City of Chelsea received funding from the Massachusetts Office of Coastal Zone Management (CZM). This grant program provides financial and technical resources for local efforts to increase awareness and understanding of climate impacts, identify and map vulnerabilities, conduct adaptation planning, redesign vulnerable public facilities and infrastructure, and implement green infrastructure approaches to enhance natural resources and provide storm damage protection.[139]

The final report, *Designing Coastal Community Infrastructure for Climate Change*, is a climate change vulnerability assessment designed to (1) identify vulnerable areas of the City at risk of coastal flooding under present day and projected future climate change conditions, (2) assess flood risk and depth, (3) prioritize critical infrastructure at risk, and (4) recommend adaptation and mitigation measures of varying scale, complexity, and cost.[140] More recently, the City has assiduously advanced elements of the recommended adaptation measures and begun to take steps to integrate resilient approaches into future planning efforts. Recently completed efforts include storm water system rehabilitation in the Everett Avenue Urban Renewal Area and the fortification of the city's sole storm water pumping station, located at Carter and Second Streets, through the encasement of the station in a protective flood barrier and the modernization of the station's supporting infrastructure, including emergency electrical generators.

Resilient Mystic Collaborative

Convened in late 2018 by the Mystic River Watershed Association, the Resilient Mystic Collaborative is an interdisciplinary taskforce composed of municipal, private sector, and nonprofit members that are within the Mystic River Watershed Area. The purpose of the task force is to strengthen collaboration and information sharing, advocate at the state and local level, devise and carry out replicable mitigation/adaptation projects, and increase the visibility and understanding of climate-related issues through strategic communications. As a member, the City has worked to illuminate the susceptibility of

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[137] *Ibid.*

[138] Metropolitan Area Planning Council. 2018. City of Chelsea Municipal Vulnerability Preparedness Program. Community Resilience Building Workshop Summary of Findings. Chelsea, Massachusetts.

[139] Massachusetts Office of Coastal Zone Management. No date. Coastal Resilience Grant Program. Online at: https://www.mass.gov/service-details/coastal-resilience-grant-program.

[140] Stantec, Woods Hole Group, and City of Chelsea. 2017. Designing Coastal Community Infrastructure for Climate Change. Online at: https://www.chelseama.gov/sites/chelseama/files/uploads/20170215_chelsea_va.pdf.

the lower Mystic region, which encompasses regional energy, food systems, utility, and transportation infrastructure, such as the New England Produce Center, road salt stockpiles, and fuel and heating oil supply chains.

Metro Mayors Climate Preparedness Commitment and Task Force

Created in 2001, the Metro Mayors Coalition (MMC) is a coalition of mayors and managers from 15 communities in Greater Boston, including Chelsea, which serves as a voluntary forum where members can exchange information and create solutions to common problems.[141] In 2015, the MCC held a summit where they signed a Climate Preparedness Commitment in which they pledged to work together to prepare the region for climate change and to reduce greenhouse gas emissions.[142]

Simultaneously, the MMC created the Metro Mayors Climate Preparedness Task Force to coordinate a regional and multi-governmental effort to protect critical infrastructure and other important resources, as well as to make policy recommendations and set regional priorities based on the goals of the Climate Preparedness Commitment. The Task Force is comprised of the 15 MMC municipalities and other state and federal agencies including the U.S. Environmental Protection Agency (EPA), Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA), Massachusetts Department of Transportation (MassDOT), Massachusetts Bay Transportation Authority (MBTA), Massachusetts Water Resources Authority (MWRA), Massachusetts Clean Energy Center (MassCEC), and the Massachusetts Port Authority (MassPort).

In 2016 the MMC signed a second agreement, the Metro Mayors Climate Mitigation Commitment.[143] In this agreement, which was inspired by the Paris Climate Agreement, the members agreed that by 2020 each municipality would develop or update a local climate mitigation plan and implement at least three climate mitigation actions from an established list and by 2050 the region would achieve net zero/carbon-free status.[144] After the U.S. withdrew from the Paris Climate Agreement in 2017, the MMC released a statement of strong support for that agreement and reaffirmed its dedication to the net zero goals of the Metro Mayors Climate Mitigation Commitment.[145]

Today, the MMC continually meets to monitor vulnerability, conduct state-level lobbying relative to funding and policy, advance replicable projects and initiatives, and foster collaboration amongst its municipal members. The Island End River, New England Produce Terminal, Marginal Street, and Mill Creek are all areas of critical resources and infrastructure that are subject to inundation pathways. The City has prioritized these areas and is planning on addressing the vulnerabilities over the next 5 years, in conjunction with its regional partners.

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[141] MAPC. No date. Metro Mayors Climate Preparedness Task Force. Online at: https://www.mapc.org/our-work/expertise/climate/mmc/.

[142] MAPC. 2015. Metropolitan Boston Climate Preparedness Commitment. Online at: http://www.mapc.org/wp-content/uploads/2017/09/Metro-Boston-Climate-Preparedness-Commitment-2015.pdf.

[143] MAPC. 2016. Metro Mayors Climate Mitigation Commitment. Online at: http://www.mapc.org/wp-content/uploads/2017/09/FINAL-Metropolitan-Mayors-Climate-Mitigation-Commitment.pdf.

[144] *Ibid.*

[145] MAPC. No date. Metro Mayors Climate Preparedness Task Force. Online at: https://www.mapc.org/our-work/expertise/climate/mmc/.

Climate Smart Cities Boston Metro Mayors

The MMC partnered with the Trust for Public Land (TPL) and MAPC to bring the Climate Smart Cities program to the Boston metro area.[146] This initiative provides key planning and decision-making support to help communities achieve their regional resilience goals by utilizing open space and green infrastructure solutions. An important element of this decision-making support is a GIS mapping tool to identify potential impacts of climate change.

Climate Ready Boston

Climate Ready Boston is an initiative created by the City of Boston to develop resilient solutions to prepare the City for climate change.[147] The City released a comprehensive report in 2016 that addresses the challenges of a changing climate in the following four components: (1) updated climate projections for extreme temperatures, sea level rise, extreme precipitation, and storms; (2) a vulnerability assessment of current and potential future risks associated with extreme heat, stormwater flooding, and coastal and riverine flooding for people, buildings, infrastructure, and the economy; (3) eight focus areas that illustrate local risks; and (4) a summary of policy, planning, programmatic, and financial initiatives that address the risks identified in the vulnerability assessment.

Although Chelsea is not included in this planning initiative, it shares Chelsea Creek with East Boston and Revere. Rising waters are opportunistic in finding inundation pathways. Decisions made on each side of the creek affect the other. This underscores the importance of understanding other local planning efforts and aligning goals and policies as much as possible. The climate risks Boston and Chelsea face are the same and therefore the communities should work together as much as possible.

City of Chelsea Hazard Mitigation Plan 2014 Update

The City of Chelsea Hazard Mitigation Plan 2014 Update advances the progress made in the 2008 Hazard Mitigation Plan.[148] Planning for the 2014 update was led by the Chelsea Local Hazard Mitigation Planning Committee, which included staff from several City government departments. The committee discussed the locations of greatest impacts from natural hazards, goals for addressing these impacts, and beneficial hazard mitigation measures. The plan update provides risk assessment for the following natural hazards in Chelsea: flooding; dam failure; wind hazards including hurricanes and tropical storms, tornados, and Nor'easters; severe winter weather including snow and blizzards; geologic hazards including earthquakes and landslides; and other natural hazards including wildland/brush fires, urban fires, drought, extreme temperatures, and tsunamis.

Research Partnerships with Academic Institutions

The City of Chelsea has partnered with several local academic institutions, such as the University of Massachusetts Boston (UMB) and Worcester Polytechnic Institute (WPI), and their associated project partners on climate change and adaptation related research projects, including the following:

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[146] The Trust for Public Land. 2018. Climate Smart Cities Boston Metro Mayors. Online at: https://web.tplgis.org/metromayors_csc/.

[147] City of Boston. 2018. Climate Ready Boston. Online at: https://www.boston.gov/departments/environment/climate-ready-bostom.

[148] MAPC. 2014. City of Chelsea Hazard Mitigation Plan 2014 Update
Online at: https://www.chelseama.gov/sites/chelseama/files/uploads/cityreviewchelsea_draft_plan_update_5-16-14.pdf.

- *Engineering Coastal Roadway and Storm Water Infrastructure for Marginal St. in Chelsea (2019)*

  Commencing in early 2019, this project will be performed by civil and environmental engineering students and faculty at WPI. The purpose of this project is to evaluate alternatives for storm barrier design, pavement and construction materials, and attendant storm water infrastructure.

- *Evaluating the Vulnerability of Boston's Inner Harbor Designated Port Areas to Sea Level Rise and Coastal Storms (2017)*[149]

  This project by WPI assessed the vulnerability of four Designated Port Areas (DPAs) in Boston's Inner Harbor, including the Chelsea Creek DPA, to sea level rise and coastal storms. Three aspects of vulnerability (exposure to a threat, sensitivity to a threat, and ability to cope with a threat and its impacts) were evaluated on 18 representative parcels. The report highlights the need for more systematic evaluation and planning by stakeholders to mitigate the risks associated with flooding due to sea level rise and coastal storm surge.

- *Assessing Heat Risks to Prepare Chelsea for a Changing Climate (2017)*[150]

  This project, performed by WPI civil and environmental engineering students and faculty, identified the extent of heat related impacts on Chelsea and its vulnerable populations and reviewed and identified adaptation strategies to address heat impacts.

- *Flood Vulnerability Assessment of Food Distribution Centers in Chelsea and Everett (2016)*[151]

  This project, performed in conjunction with UMB, created a flood vulnerability assessment of food distribution centers in Chelsea and Everett to illustrate the larger regional implications of climate impacts on food distribution in the Greater Boston area and guide the development of site-specific strategies for addressing identified vulnerabilities.

- *Creation of Flood Risk Adaptation Measures for Critical Public Facilities in Chelsea, Massachusetts (2015)*[152]

  This project, performed by WPI civil and environmental engineering students and faculty, provided flood adaptation strategy recommendations and relative cost estimates for public facilities critical to the City of Chelsea. Five public facilities within the City were evaluated to determine the structural and geographical characteristics that cause them to be at risk from coastal flood events, as well as their probability for current and future flooding.

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[149] Worcester Polytechnic Institute. 2017. Evaluating the Vulnerability of Boston's Inner Harbor Designated Port Areas to Sea Level Rise and Coastal Storms. Online at: https://web.wpi.edu/Pubs/E-project/Available/E-project-101217-101744/unrestricted/BostonHarborNow_FINAL_REPORT.pdf.

[150] Worcester Polytechnic Institute. 2017. Assessing Heat Risks to Prepare Chelsea, Massachusetts for a Changing Climate. Online at: https://wp.wpi.edu/boston/projects/projects-2017/2017-heat-risks-in-chelsea/.

[151] Watson, C., Douglas, E., and A. Teferra. 2016. Assessing Climate Vulnerabilities of Food Distribution Center Sites in Greater Boston: Climate Adaptation Planning in Practice. Online at: https://thrivingearthexchange.org/wp-content/uploads/2016/03/Paper_164721_handout_10473_0.pdf.

[152] Worcester Polytechnic Institute. 2015.Creation of Flood Risk Adaptation Measures for Critical Public Facilities in Chelsea, Massachusetts. Online at: https://web.wpi.edu/Pubs/E-project/Available/E-project-101515-172600/unrestricted/Boston15MIT_FinalReport.pdf.

- *Preparing the City of Chelsea, Massachusetts to Better Adapt to Climate Change (2014)*[153]

  This project, performed by WPI civil and environmental engineering students and faculty, identified potential impacts of flooding and prepared guidance documents for City permitting boards (Planning Board, Zoning Board, and Conservation Commission) to inform them about climate change and its impacts, provide a list of physical and socioeconomic vulnerabilities in the City, provide questions to ask developers, and highlight mitigation and adaptation strategies.

[153] Worcester Polytechnic Institute. 2014. Preparing the City of Chelsea, Massachusetts to Better Adapt to Climate Change. Online at: https://web.wpi.edu/Pubs/E-project/Available/E-project-101614-174110/unrestricted/Boston_Climate_IQP-_final_report.pdf.

Chapter 6: Economic Analysis

Chelsea Economic Baseline Conditions

In 2017, 965 business, industry, and government establishments were located within the City of Chelsea. They employed approximately 16,000 people, paying wages of over $821 million for an average annual salary of approximately $51,000[154] .

Employment growth has recovered from the recession but appears to have reached a plateau. Since 2008, 266 new establishments have been created in the City. Weekly wages have increased at an annualized rate of 1.8% from $846 in 2008 to $985 in 2017[155].

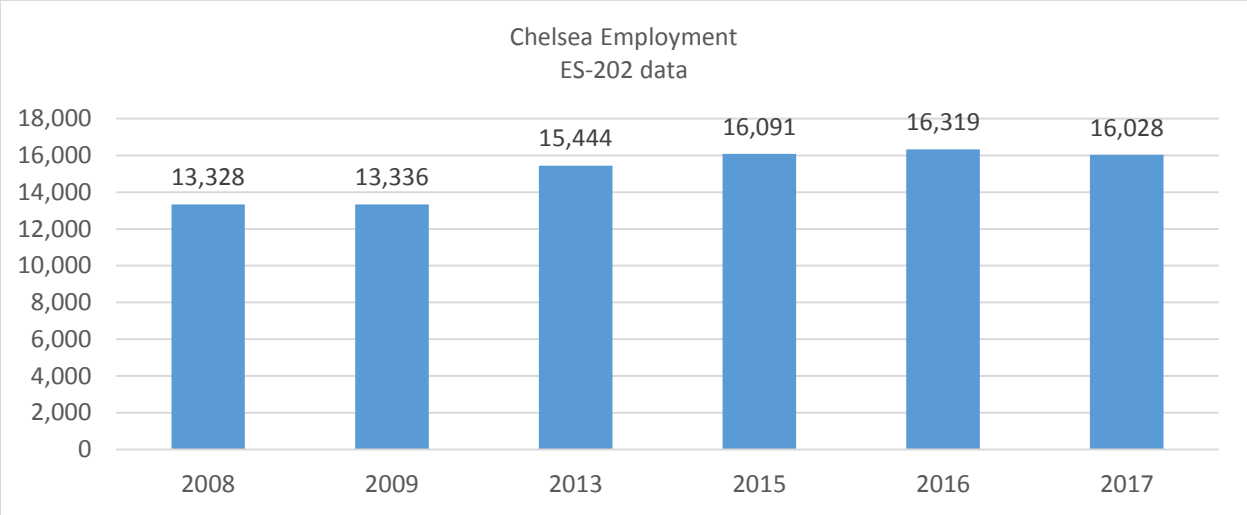

Figure 25: Chelsea Employment figures from 2008-2017

Key industries are listed in Table 4.

[154] NP analysis of Massachusetts LMI ES-202 data.

[155] *Ibid.*

Table 4: Top Ten Industries in Chelsea[156]

Top 10 Industries	Employees
Health Care and Social Assistance	2,240
Retail Trade	1,828
Public Administration	1,827
Wholesale Trade	1,680
Administrative and Waste Services	1,652
Transportation and Warehousing	1,489
Manufacturing	1,290
Educational Services	1,242
Accommodation and Food Services	992
Other Services not professional	475

With respect to commercial and industrial activities that include activities consistent with potential DPA uses, 28% of the city's employment base and 34% of the wage base is tied to logistics, wholesale activities, and manufacturing. Ensuring these industries have the opportunity to grow and thrive are critical to the economic wellbeing of Chelsea.

Industry Growth Potential

While the land side along Chelsea Creek is limited, it is strategically located to be a major benefit to businesses supporting Logan Airport or needing waterside access.

The amount of available existing land zoned industrial within the immediate vicinity of Boston (Boston, Everett, Chelsea) is limited. Approximately 1,700 acres are vacant or underutilized[157]. By contrast, there are 10,000 businesses in Middlesex and Suffolk counties that require industrial zoned land.

The limited availability of industrial land has put substantial pressure on real estate pricing in this market segment. Based on broker reports, the industrial market in Boston and the immediate vicinity is highly active. Vacancy levels are at 6.6%, well below the historic average of 9.3%. This has caused rents to increase by 30% with flex space asking rents of over $17 NNN[158] per square foot and warehousing rents of $12 NNN per square foot. In response to the improved economics of industrial and warehousing space, 70,000 square feet of new building capacity was being added in the urban core in 2017.

Suburban markets are adding capacity to meet the excess demand generated in the urban core. The overall greater Boston suburban industrial market is approximately 145 million square feet of space. Three million square feet of additional capacity was being added in 2017. Rents in the suburbs are substantially below those paid in the urban core. By comparison, suburban flex space rents are 42%

[156] *Ibid.*

[157] Raymond Flynn Marine Industrial Park Study, 2017.

[158] NNN is triple net lease – tenant pays maintenance, utilities and taxes.

below Boston rents and warehousing rents are 50% below Boston rents.[159] This differential clearly identifies the premium that industrial and warehousing users are willing to pay for "last mile" access to Boston and its transportation centers.

Water Dependent Industries

There are over 10,000 industrial, logistics, and industrial service-type businesses in Suffolk County and Middlesex County.[160] By comparison, there are only 118 water-dependent businesses—as defined by the DPA regulations—located in the 2 counties – 1.1% of all industrial-type businesses. Fifty-eight percent of these businesses are related to the seafood industry as processors or wholesalers with wholesaling representing 64% of these businesses. From prior work for the Boston Marine Industrial Park (BMIP) plan, these businesses are located exclusively in Boston and the BMIP due to the proximity to Logan Airport in order to receive or send shipments of seafood via air cargo with minimal delay. (Due to the limited number of companies, a great deal of information, *e.g.,* employment and wage data, was suppressed, making it impossible to provide a breakdown of specific businesses and the associated job densities for each.)

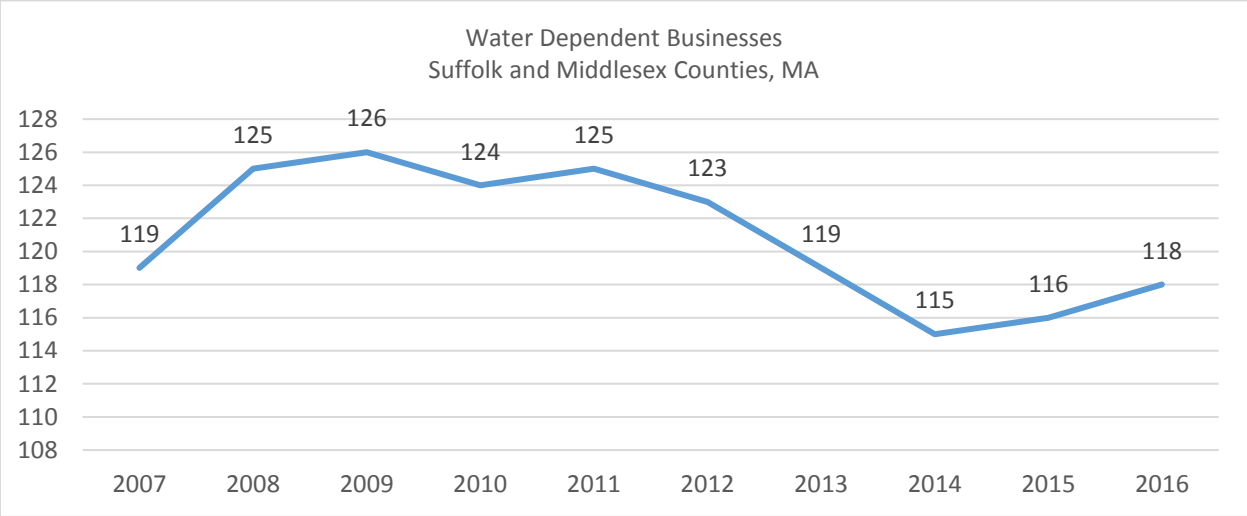

Figure 26: Count of Water Dependent Businesses in Suffolk and Middlesex Counties[161]

Freight & Cargo Analysis

A broad range of commodities, 19 million tons by weight, are shipped into Massachusetts through a variety of modes. Eighteen percent of these commodities are non-metallic mineral products. This category includes salt, sand, gravel, and clay. This category of freight is shipped primarily by ship or rail[162].

[159] Cushman Wakefield Q2 2018 Industrial market report.

[160] BLS ES 202 data.

[161] NP analysis of Massachusetts LMI ES-202 data.

[162] Massachusetts 2017 Freight Plan.

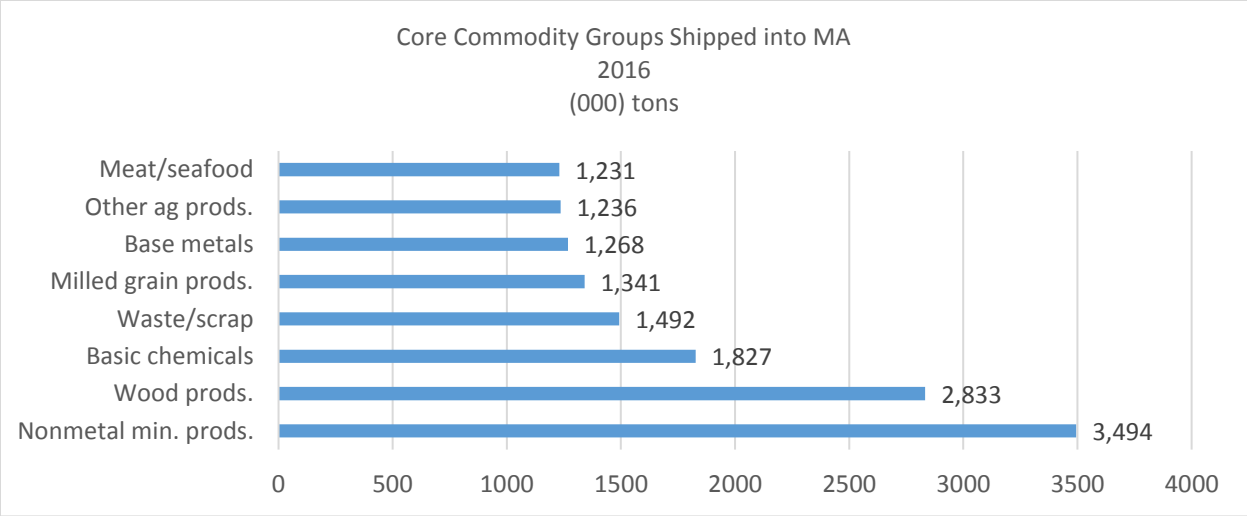

Figure 27: Core Commodity Groups Shipped into Massachusetts

The Massachusetts 2017 Freight Plan forecast shows increased freight traffic by air and water. Waterborne freight is projected to increase by 1 million tons from the 2016 base year to 2045. The level of increase is roughly 35k tons per year. Depending on the cargo type and the size of the vessel, this equates to an additional 1 to 2 ship calls each year or an additional 58 ship dockings per year by 2045. Most of these additional vessels would not be docking in Chelsea Creek given the current land use patterns.

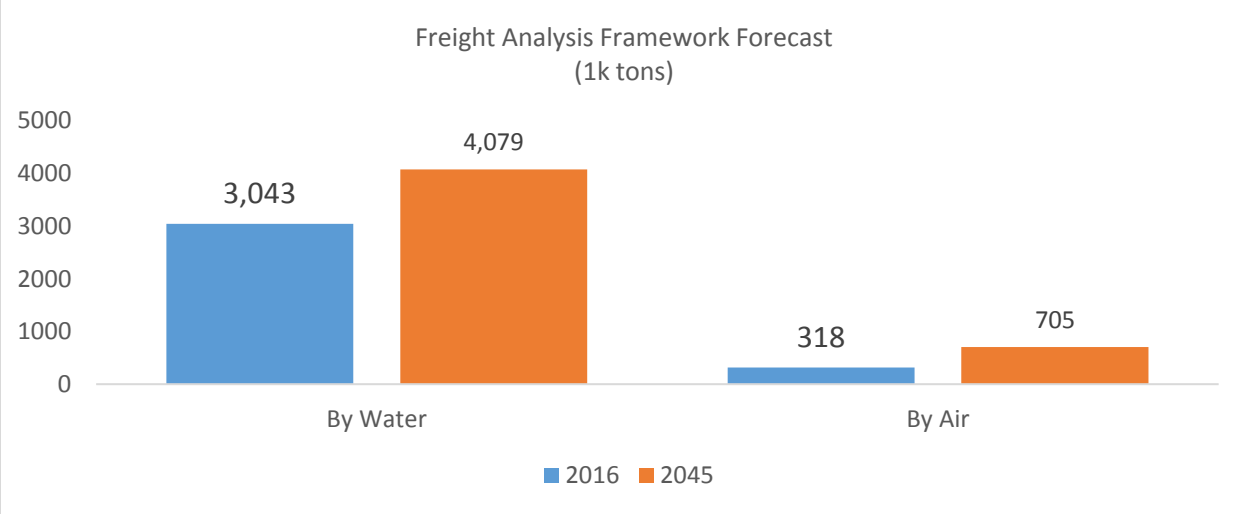

Figure 28: Freight Analysis Framework Forecast

Air cargo is projected to increase by 121% by 2045, although it will still be under 1 million tons. Air cargo tends to fall into one or more categories including high value to weight, just-in-time, or perishable. Proximity to the airport matters because it reduces the drayage costs for distributors.

Role of Logan Airport in driving demand

While Logan Airport is part of the Port of Boston, it is also a major competitor for space around Boston Harbor. Airport uses can typically afford to pay higher rents than maritime industrial uses, putting additional pressures on DPA land-owners to continue to license temporary uses that support airport

activities. Continued growth at Logan Airport will continue to put pressure on nearby available land to serve the logistical requirements of the airport. This includes cargo movement, parking, overnight stays, and staging areas. Massport's midterm goal is to achieve 45 million passengers supported by terminal modernization and additional gates for both domestic and international travelers.[163] Forty-five million passengers represents a 13% increase in passenger traffic through Logan's terminals, though a timeframe was not provided for these numbers.

[Discussion of petroleum industry forthcoming]

Opportunities for Chelsea Creek

As one of the few remaining industrial areas near Boston, Chelsea Creek has several development opportunities to take advantage of its first mile / last mile position with respect to key transportation hubs. The demand for industrial and logistics type space is likely to continue in the future as the Airport continues to grow and the last mile connections for e-commerce grow in importance. What role water dependent industries will play in driving this demand is unclear but based on the trend-line of the number of operating companies, it will more likely be driven by growth of existing companies needing additional space.

One of the key issues will be balancing, protecting, and enabling "water dependent" uses while supporting the critical logistical requirements of a major global city. A form-based, typology-centric model that does not preclude water dependent industrial uses, rather than an industry-use defined model, will enhance Chelsea Creek's opportunity for physical and job development consistent with the requirements of the DPA. A form-based typology would define industrial building forms, size, and scale that have broad application to a range of industrial uses including marine industrial uses that require physical indoor facilities. Pursuing this type of approach provides a broader potential tenant mix to make industrial development more viable while not conflicting with marine uses.

In 2017, the city of Chelsea commissioned a hotel market study. The study determined that the City could support another nationally branded 125 to 150 room hotel. Potential locations for the hotel site were identified as the Mystic Mall area and Chelsea River East. Several regulatory issues were identified including the need to adjust height limits upward to accommodate the hotel.

[163] Massport Feb 2018 Board meeting staff presentations.

Chapter 7: Policies and Strategies of the Municipal Harbor Plan

This chapter presents the policies and related strategies intended to achieve the plan's vision beyond, and consistent with, the parameters of the DPA Master Plan. The policies and strategies are broken down by topic and the organization of topics reflects the city's priorities.

7.1 Public Access:

Policy: Create and maintain physical and visual public access within the harbor planning area that promotes recreation, relaxation, engagement with the waterfront, and economic development.

Strategies:

A. Generate standardized public access signage requirements that will clearly identify access opportunities to and/or along the waterfront.
B. Develop robust point access on either side of the Chelsea Street Bridge for all segments of the community. Point access at these sites should be designed as a gateway to Chelsea and should accommodate public programming.
C. Require that all permitted development in the DPA provide point access from the public right-of-way to the water's edge at every property boundary. Additionally, if point access exists on the edge of an abutting property, efforts should be made to locate any new point access in a manner that is directly adjacent to the existing access and without any physical barriers. Where there are multiple contiguous parcels, this provision would encourage their consolidation so that there are not multiple licenses with different end dates and there are larger parcels to market to maritime industrial users.
D. Provide lateral pedestrian and bicycle access on any waterfront parcel, city-wide, that is not in a DPA, with connections to the public rights-of-way. Linkage should be coordinated and made contiguous over time, without barriers and with appropriate signage to identify connections.
E. When applicable, Chapter 91 license conditions should require payments to support the development, maintenance, and programming of public access in a manner that does not interfere with water-dependent industrial uses. As part of this, the City should establish a Waterfront Improvement Fund to receive these payments. Specific details are available in Appendix I.
F. Ensure that Ch. 91 licenses include appropriate public access conditions aligned with the municipal requirements stated in any special permit or variance. Coordinate permit language so that identical language appears in both city and state permits, allowing either to enforce those conditions.
G. Provide public access over tidelands in instances where said tidelands (1) cannot be used for commercial navigation and (2) directly abut a sidewalk, road, or railroad.
H. Provide for responsible use of the watersheet by small craft while respecting and educating the public about the moving exclusion zone around vessels under tow.

7.2 Public Programming:

Policy: Develop, support, and maintain public programming that creates economic and cultural opportunities for the community.

Strategies:

A. Utilize the point access on either side of the Chelsea Street Bridge for public art and seasonal, temporary retail and public programming purposes. Examples of programming include pop-up markets, seasonal retail, outdoor movies and entertainment, and food trucks.

B. Develop signage requirements and best practices throughout the planning area and abutting neighborhoods to highlight the area's history and existing uses. As part of this, consider designs that highlight the evolution of the parcel, including historical photographs if available.
C. With redevelopment, promote the installation of public art and programmable open space as appropriate.
D. When applicable, Chapter 91 license and City permit conditions should require payments to support public programming. The City should establish a Waterfront Improvement Fund to receive these payments (see Appendix I).
E. Promote the inclusion of community amenities within new developments in the planning area. Community amenities include, but are not limited to public restrooms, public parking, passive and active recreation opportunities, and meeting spaces that could be used for community events.

7.3 Economic Development:

Policy: Encourage uses in the harbor planning area that will create living-wage, local jobs and support the local economy.

Strategies:

A. Support the redevelopment of waterfront properties to generate economic opportunities and increase job density – especially for blue-collar, living-wage jobs that would be appropriate for the demographics that live in Chelsea.
B. Facilitate the strategic siting and development of supporting uses through the reallocation of percentages of supporting and water-dependent industrial uses allowable within Chapter 91 jurisdiction (See DPA Master Plan for details).
C. Allow for the licensing of new or conversion of existing buildings for supporting commercial uses on upper floors as long as the ground floors are designed and reserved for water-dependent industrial uses. (See the DPA Master Plan chapter for further details.)
D. Explore opportunities to develop a marine technology cluster, capitalizing on the area's access to employees and local colleges and universities.[164]
E. Coordinate the terms of temporary Chapter 91 license renewals on abutting parcels in order to facilitate more competitive marketing of parcels for sale to or use by water-dependent industrial users.
F. Require that all temporary licenses and renewals thereof include a condition requiring payment into the Waterfront Improvement Fund for the duration of their temporary licenses and subsequent renewals (See Appendix I).
G. Promote the use of temporary and/or seasonal structures and activities (*e.g.*, food service, outdoor theatre) associated with public access/public programming to create new economic and cultural opportunities.

7.4 City Zoning:

Policy: Ensure that the city's land use regulations effectively promote the policies of this plan and align with the relevant policies of MGL Chapter 91, the Public Waterfront Act.

[164] Boston Harbor Now. 2017. Boston's Working Ports: A foundation for Innovation. Online at: http://www.bostonharbornow.org/wp-content/uploads/2017/12/FOR-RELEASE-Bostons-Working-Port-A-Foundation-for-Innovation-v1-24.pdf.

Strategies:

A. Create a new zone consisting of the waterfront sides of Marginal Street and Eastern Avenue from Pearl Street to the railroad crossing of Eastern Avenue.
B. Create a new zone comprised of the existing Waterfront zoned parcels on the upland side of Marginal Street east of Pearl Street with the intent to preserve and promote economic development and minimize conflicts in the area between the waterfront and upland residential neighborhoods.

Additional zoning strategies relevant to the DPA can be found in the DPA Master Plan (Section 8 of this document). Broadly speaking, the strategies include:

1. Preserve the industrial character of Marginal Street and Eastern Avenue.
2. Preclude residential development as it is incompatible with the industrial character of the area.
3. Revise the allowed uses table.
4. Redefine Lot Area to exclude land under water.

7.5 Transportation:

Policy: Increase opportunities for users of all modes and all abilities for improved transportation to, from, and through the Chelsea Creek waterfront.

Strategies:

A. Work with the U.S. Coast Guard, the Massachusetts Department of Transportation, and others to reduce impacts related to the opening of the Chelsea Street Bridge and the Andrew McArdle Bridge. Pursuant to C.F.R. §117.8 *Permanent changes to drawbridge operation*, "Anyone may submit a written request to the District Commander for a permanent change to a drawbridge operating requirement. The request must include documentation supporting or justifying the requested change. (b) If after evaluating the request, the District Commander determines that the requested change is not needed, he or she will respond to the request in writing and provide the reasons for denial of the requested change. (c) If the District Commander decides that a change may be needed, he or she will begin a rulemaking to implement the change." Additionally seek to develop modified operational procedures so that bridge openings are not required for each tug leaving the upper Creek independently.
B. Work with MassDOT to find short-, medium-, and long-term solutions to the structural inadequacies of the new Chelsea Street Bridge, including the inability to open to less than full height and the speed at which the mechanical lift system operates.
C. Improve access along Eastern Avenue and Marginal Street through the widening of sidewalks, installation of new signaled crossings, use of traffic calming devices, and development of bike lanes. Ensure that these new measures provide improved visual access to the Creek and accommodate industrial uses such as truck traffic.
D. Reconfigure the intersections and roadways on both sides of the Chelsea Street Bridge to prioritize Silver Line traffic and safely accommodate pedestrians and bicyclists.
E. Make efforts to ensure that permitted uses of the waterfront and watersheet do not greatly increase the number of openings of the Chelsea Street Bridge.
F. Explore the potential for a ferry dock and/or water taxi stop at 197-201 Marginal Street. As part of this effort, conduct potential ridership studies.
G. Recommend a new bridge crossing at Mill Creek to provide direct vehicle access from the vicinity of the Forbes site to Route 16 and/or Route 1A in Revere. Investigate the possibility of

developing this new crossing in conjunction with the repair or replacement of the current rail crossing of Mill Creek.

H. Improve the intersection of Chelsea Street, Eastern Avenue, and Central Avenue. This intersection should be redesigned to achieve several important goals: (1) give priority to the Silver Line buses, (2) reduce crossing distances for pedestrians, (3) allow sufficient time for pedestrians of all abilities to cross, (4) accommodate cyclists traveling in all four directions, (5) allow for continued traffic flow between Marginal Street and Eastern Avenue when the bridge is up and closed to vehicles, and (6) provide for the orderly clearing of traffic backups caused by the bridge closure. Further consideration should be given to the possible reconfiguration of the current lanes on the bridge itself. One possible reconfiguration could reserve one lane as a dedicated guideway for the Silver Line to be controlled by signals on both ends of the bridge, reserve a second lane for a mixed-use path connecting the Chelsea Greenway to East Boston and eventually the East Boston Greenway, and use the remaining two lanes for mixed traffic, with one lane of travel in each direction.

7.6 Infrastructure Improvements:

Policy: Ensure that waterfront infrastructure is safe and adequate to accommodate existing and anticipated uses, and ensure that infrastructure improvements address predicted sea level rise and storm surge scenarios based on the best available science.

A. Require waterside infrastructure assessments for each parcel/property that goes for license renewal or for redevelopment projects.
B. Establish baseline expectations for waterside improvements depending on the use of the waterfront property.
C. Integrate flood prevention/mitigation measures into redesign or improvements for waterside infrastructure.

7.7 Climate Change:

Policy: Minimize economic, social, and environmental impacts of climate-change-related flooding.

Strategies:

A. Seek grant funds and utilize existing resources and the best available science to conduct a comprehensive planning effort to understand the vulnerabilities and potential approaches to address climate change risks within the planning area – as well as along all of the City's waterfront. As part of this:
    1. Identify potential economic impacts under current flooding projections – both during a storm as well as in the days and weeks following a storm (e.g., disruption of fuel service to Logan Airport for several weeks). Use the planning process for the Port of Providence, Rhode Island as a potential model for stakeholder engagement.[165]
    2. Explore opportunities to protect against, retreat from, and/or accommodate flooding. Example strategies include:
        a. Aggressively mitigate all identified inundation pathways.

[165] Hurricane Resilience Long Range Planning for the Port of Providence. Online at: https://www.portofprovidenceresilience.org/

b. Create vertical barriers that can also facilitate enhanced public access, such as raising the sidewalk along Marginal Street.[166] These measures should be designed to accommodate continued industrial uses (e.g., curb cuts and sidewalk crossings should not create challenges for turning trucks)
c. Elevate waterfront properties in a way that minimizes flooding but maintains access for water-dependent industrial uses and protects public point access
d. Develop berms or other infrastructure designed to both contain products stored along the waterfront (e.g., salt, cars, and fuel) in the event of a spill/flood and to prevent flooding from sea level rise and storm surge
e. Develop in-water nature-based solutions such as floating reefs. These water-dependent projects would be sited in a way that maximized protection against flooding without introducing navigational hazards or impairments to existing and future water-dependent industrial uses
f. Require structures in flood areas to be elevated and that no mechanical systems be placed on the ground floor
g. Identify infrastructure improvements on Marginal Street to address climate change impacts, building on previous studies.
h. Conduct environmental site assessments of contaminated properties to obtain information about the potential risks associated with flooding, and explore options for minimizing potential environmental impacts.
i. Ensure that measures taken to improve resiliency and mitigate impacts of climate change and sea level rise do not preclude access for water-dependent industrial uses.
j. Review and modify existing zoning in the City to address climate change. As part of this, consider building elevation requirements.

B. Ensure that all Chapter 91 licenses issued for the Chelsea Waterfront consider projected climate change impacts.
   1. Require that permitted projects mitigate inundation pathways and protect the public infrastructure.
   2. Require that permitted projects actively prevent pollution contained on the site from travelling beyond the site for the duration of the permitted use, using the best available science to understand flood risks over the permitted time period.

7.8 Pollution:

Policy: Encourage waterfront uses in a manner consistent with all state and federal environmental regulations, promote the remediation of contaminated sites, and expand progress in realizing the promise of the Clean Water Act of swimmable and fishable waters.

Strategies:

A. Require on-site remediation as part of redevelopment projects.
B. Identify and eliminate sources of contamination into the Creek, including CSOs.
C. Improve monitoring of water quality and notify public of events which compromise water quality.

[166] Stantec, Woods Hole Group, and City of Chelsea. 2017. Designing Coastal Community Infrastructure for Climate Change. Online at: https://www.chelseama.gov/sites/chelseama/files/uploads/20170215_chelsea_va.pdf.

Chapter 8: DPA Master Plan

This chapter of the City of Chelsea Municipal Harbor Plan is prepared as the Master Plan for the city's portion of the Chelsea Creek Designated Port Area (DPA) (Figure 29).

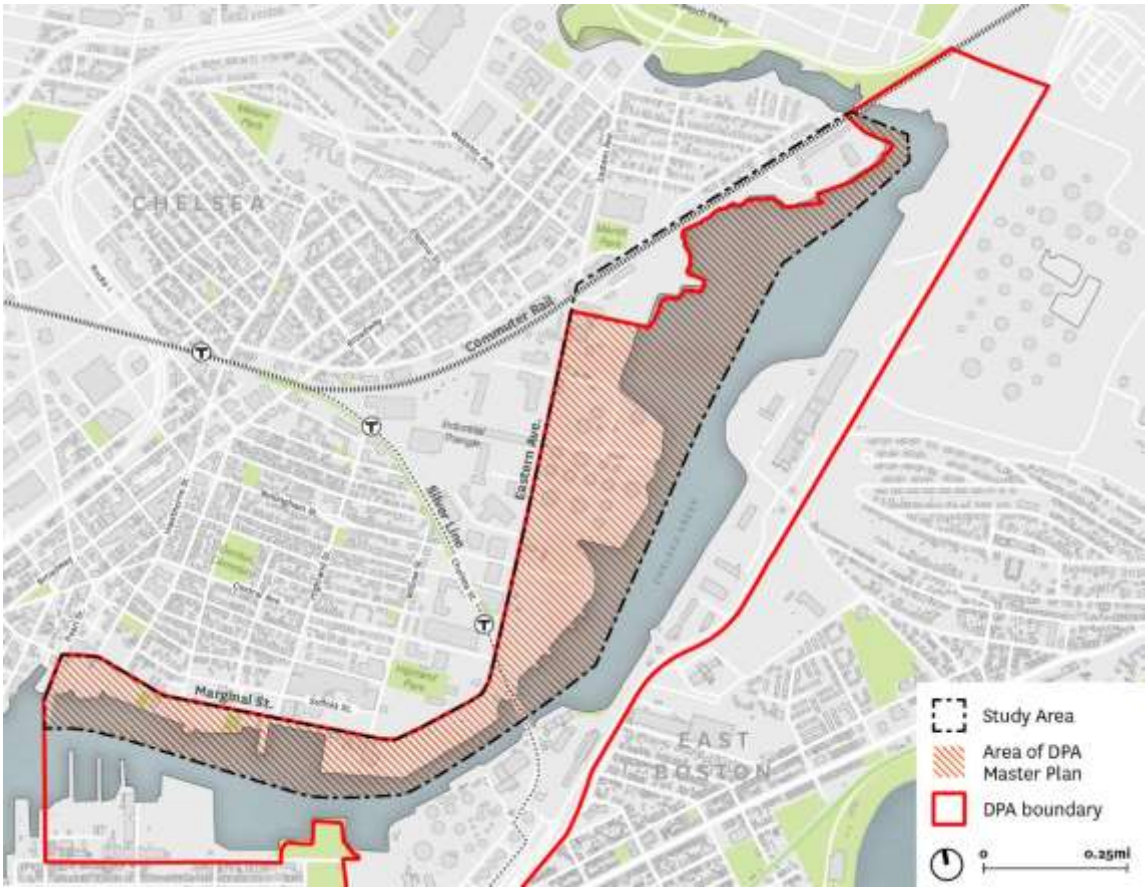

Figure 29: Designated Port Area Master Plan planning area

The Chelsea Creek DPA covers the entire watersheet area within the city's jurisdiction in the river and most of the adjacent land area and piers from the Andrew P. McArdle Bridge upstream to the MBTA rail crossing. The upland portions of several parcels at the northern end of the DPA, the Forbes parcel (18 acres) and the parcels on which Glyptal and Atlas Glen-More companies are located (22 acres), were removed from the original DPA boundary on April 6, 2016, following a formal boundary review process by the Massachusetts Office of Coastal Zone Management.

Goals and "vision"

This plan fully endorses water-dependent industrial use of an extensive amount of the DPA land area in close proximity to the water, provides guidance for improving community access to the waterfront in ways compatible with industrial use, and presents a strategy for accommodating supporting commercial and industrial uses and related adjacent development in ways that maximize the waterfront's economic development potential and job creation.

The city's goals for the Chelsea Creek DPA are to:

1. Maintain and support existing water-dependent industrial uses, and encourage new and expanded uses in suitable locations.
2. Provide flexibility in permitting and licensing of commercial and industrial supporting uses to encourage their siting in areas where they will neither alter nor introduce incompatibilities in areas of predominantly marine industrial use.
3. Encourage and manage, through the city's Zoning Ordinance, the use of DPA land area outside of Chapter 91 jurisdictional land (flowed and filled tidelands) for commercial and industrial development for purposes of expanding the city's economy, tax base, and job opportunities.
4. Promote increased public access to Chelsea Creek by:
    a. Incorporating requirements into the permitting and licensing of all development and redevelopment in the DPA for contributions for increasing or improving public access;
    b. Designing and locating perpendicular (lateral) and point access to the waterfront to serve Chelsea neighborhoods; and
    c. Improving publicly-owned property to enhance access from city neighborhoods to the waterfront.

The Chelsea Creek Municipal Harbor Plan and DPA Master Plan support the following on property within the DPA:

1. Water-dependent industrial uses on filled tidelands, pile-supported structures, and upland and accessory uses thereto outside the water-dependent use zone.
2. Water-dependent and non-water-dependent commercial and industrial uses as supporting uses on filled tidelands (prohibited on pile-supported structures by 310 CMR 9.02) in an amount not to exceed 25 percent of the total area of filled tidelands within the DPA.
3. Commercial and industrial uses on upland portions of properties within the DPA, sited and designed so as not to diminish the total area of the water-dependent use zone, nor conflict with, preempt, or discourage water-dependent activity or public use and enjoyment of the water-dependent use zone.

The DPA Master Plan proposes a regulatory framework and detailed implementation measures to ensure that extensive areas of the DPA within Chapter 91 jurisdiction are reserved for water-dependent industrial uses, and puts forward limits on commercial uses to prevent incompatibility with marine industry while continuing to provide flexibility in the density and location of allowable DPA supporting uses. The plan recommends revisions to the city's Zoning Ordinance (Ch. 34 of the Chelsea Code of Ordinances) which support these objectives. See section below.

DPA Land Use Context and Calculations

The Chelsea Creek DPA consists of: flowed tidelands, including the water sheet and pile-supported piers, both of which are subject to Chapter 91; filled tidelands, which are subject to Chapter 91; and upland areas that have always been landward of normal tidal action, which are not subject to Chapter 91. Because Chapter 91 jurisdiction extends only to filled and flowed tidelands, DPA land use regulations do not apply to upland areas within the boundary of the larger DPA.

Table 5: Land area (in acres) and existing land uses within the Chelsea Creek DPA

[Table needs updating. Awaiting input on final methodology]

	Total	Within jurisdiction
Water Dependent industrial Uses	***TBD***	***TBD***
Existing WDIUs	51.19	22.39
Licensed temporary WDIUs	?	?
Vacant land	0.86	0.68
ROW	12.37	1.14
Open space	0.52	0.45
Supporting uses	***TBD***	***TBD***
Existing supporting uses	4.77	2.32
Licensed temporary supporting use	?	?
Total	***TBD***	***TBD***

As shown in Table 5, less than half (42%) of the land area of the DPA is within Chapter 91 jurisdiction. Currently, the amount of DPA land within jurisdiction that is committed or available to water-dependent industrial uses is 38 acres or 86.6 percent and the amount currently used for supporting use is 5.9 acres or 13.4 percent. [Note – these figures will be updated after calculations are finalized]

The director of the City of Chelsea Planning and Development Department shall maintain an accounting of the commercial Supporting DPA uses within the Chelsea Creek DPA Master Plan area and provide a statement verifying compliance with the requirement that commercial uses and any accessory uses thereto will not, as a general rule, occupy more than 25 percent of the total DPA land area.

One of the DPA Master Plan approval standards (301 CMR 23.05(e)(1)) is that the plan shall ensure that an extensive amount of the total DPA land area in close proximity to the water will be reserved for water-dependent industrial uses and, further, that commercial uses and any accessory uses thereto will not, as a general rule, occupy more than 25 percent of the total DPA land area [within jurisdiction] covered by the Master Plan. Twenty-five percent of the land within jurisdiction is 10.3 acres, so the opportunity exists for an additional 4.4 acres of supporting uses within the jurisdictional area of the DPA.

Strategies [The following strategies are presented for discussion, and will be finalized based upon feedback during the draft review process]

In general, a DPA Master Plan must preserve and enhance the capacity of the DPA to accommodate water-dependent industry and prevent substantial displacement of these activities by other non-water-dependent uses. The Chelsea Creek DPA Master Plan does this by:

1. Promoting, preserving, and ensuring the active use of the shorefront of each property. Access to the water shall either be by water-dependent industrial users, or by point access or walkways, as appropriate;
2. Working with owners of existing water-dependent industrial businesses to expand their investments and operations and attract new maritime uses to the waterfront;
3. Encouraging supporting and related commercial uses that strengthen the economic viability of waterfront property and its ability to maintain important shore-side infrastructure;
4. Providing flexibility in the amount, distribution, and locations of supporting commercial uses to encourage reinvestment in waterfront property and infrastructure;
5. Promoting active public access in specific areas along the waterfront to enable community members improved access to the water in ways that will neither limit nor interfere with water-dependent industrial operations; and
6. Recommending revisions to both the City Ordinances and specific modification of state regulations to codify the plan's recommendations.

Supporting DPA Uses

Any industrial or commercial use, other than those posing a severe conflict with port operations, is eligible for licensing as a supporting DPA use. The Chapter 91 regulations suggest small businesses, retail, and service facilities; shops of tradespersons, eating and drinking establishments with limited seating, and small offices as examples of supporting commercial uses compatible with the DPA. Administrative offices that are part of a maritime industrial enterprise are categorized as accessory uses. The Chapter 91 regulations categorically exclude from eligibility as a supporting DPA use hotels/motels, nursing homes, hospitals, recreational boating facilities, entertainment facilities, and new buildings devoted predominantly to office use.

Guidance to DEP

The Plan proposes guidance that will have a direct bearing on DEP licensing decisions within the Harbor planning/DPA Master Plan area. Included in this proposed guidance are:

1. Provisions for substitution of certain specific minimum numerical standards in the regulations;
2. Provisions that amplify certain discretionary requirements of the Waterways Regulations; and
3. Proposed revisions to Article II, Zoning Districts, Sec. 34-27 Specific districts, Sec. 34-300 Table of principal use regulations, Sec. 34-155 Planned development, Sec. 34-215 Site plan review, and Article X Sec. 34-241 Definitions in the city's Zoning Ordinance These revisions:
    a. Establish a new zoning district that limits uses to water-dependent industrial, general industrial, commercial uses, and accessory uses on properties within the DPA;
    b. Establish a new district on the upland side of Marginal Street consisting of land that was previously in the Waterfront zone that creates a commercial buffer between the DPA and adjacent residential neighborhoods;
    c. Address the MHP approvability standard of 301 CMR 23.05(2)(e)(4)(c), which states that the plan set forth a strategy that commits to maintaining "…a surrounding land

development pattern that provides an appropriate buffer between industrial uses in the DPA and community uses that require separation therefrom in order to avoid significant operational conflict;

d. Preclude the use of planned development as a vehicle for residential development in the Marginal Street and Eastern Avenue waterfront and upland parcels;

e. Establish additional standards for site plan review of new or expanded uses in the Port district to ensure consistency with this plan's goals, the standards for Municipal Harbor Plan approval, and with Ch. 91 licensing requirements; and

f. Modify the definition of 'Land Area' to include only the portion of a parcel that is above mean high water.

These additional criteria help ensure that no more than 25 percent of the filled tidelands within the DPA will be used for commercial supporting uses and accessory uses thereto. The plan does anticipate and enables flexibility in the amount of supporting use on any individual parcel as long as the total across all DPA filled tidelands does not exceed 25 percent.

Table 6: Proposed substitutions of the minimum use limitations or numerical standards of 310 CMR 9.00.

Regulatory Provision	Chapter 91 Standard	Substitution	Offsetting Measure
310 CMR 9.51(3)(c) Establishment of a Water Dependent Use Zone	"…along portions of a project shoreline other than edges of piers and wharves, the zone extends for the lesser of 100 feet or 25% of the weighted average distance from the present high water mark to the landward lot line of the property, but no less than 25 feet…" and "…along the ends of piers and wharves, the zone extends for the lesser of 100 feet or 25% of the distance from the edges in question to the base of the pier or wharf, but no less than 25 feet" and "…along all sides of piers and wharves, the zone extends for the lesser of 50 feet or 15% of the distance from the edges in question to the edges immediately opposite, but no less than ten feet."	The required WDUZ dimensions may be modified on any property as long as a minimum width of 25 feet is maintained along the project shoreline and the ends of piers and wharves, and a minimum of 10 feet along the sides of piers and wharves, and as long as the modification results in no net loss of WDUZ area.	Substitution provision can only be applied to those project sites where it is shown that application of the Ch. 91 standard would result in an inefficient siting of uses in the WDUZ, and where the resultant reconfiguration achieves greater effectiveness in the use of the water's edge for water-dependent industrial use. The reconfigured zone must be adjacent to the waterfront and within jurisdiction. In no case will a reconfigured WDUZ result in an area separated from the waterfront or in a net loss of WDUZ. Specifically: 111 Eastern Avenue: reduce the WDUZ to 25 feet at the far northern end of the site where the shoreline runs straight north to south. That adjacent water area is a

			shallow inlet within the property bounds of the abutting property effectively cutting off direct access from this portion of the site. The displaced area of WDUZ would be added on-site in an area of greater utility and value: along the area fronting Chelsea Creek with old mooring dolphins, where the WDUZ is at its narrowest.
310 CMR 9.51(3)(e) 55-foot height limitation	New or expanded buildings shall not exceed 55 feet in height if located over the water or within 100 feet of the high water mark; for every foot beyond 100 feet from the high water mark, the height of the building can increase by 0.5 feet.	111 Eastern Avenue: at the northern end of the site in the area where the WDUZ is reduced, allow building height to exceed 55 feet.	

Amplifications

In accordance with the authorization in the regulations for Review and Approval of Municipal Harbor Plans (301 CMR 23.00), and as consistent with the definition in 310 CMR 9.02, the Chelsea Creek Municipal Harbor Plan and DPA Master Plan endorses non-water-dependent industrial and commercial uses in the DPA, which are all allowable under the city's zoning code, as Supporting DPA Uses.

The standards in 310 CMR 9.36(5) are concerned with the construction of new buildings or commitment of space for non-water-dependent uses that could otherwise be used for water-dependent industrial use. While concurring with this policy, and consistent with the purpose of the supporting DPA use provisions of the Waterways regulations, the Chelsea Creek DPA Master Plan recognizes that new investment in structures for water-dependent industrial uses may be driven by the revenue that is generated by supporting commercial and industrial uses on site. Consequently, this plan endorses the concept of licensing new structures or the conversion of existing buildings for supporting commercial uses on upper floors as long as the ground floors are designed and reserved for water-dependent industrial uses.

In order to support the implementation of this DPA Master Plan, several changes to the city’s zoning ordinance are required. They are available in Appendix J.

List of Appendices:

[Yellow highlighted Appendices not included in this version]

A. Implementation Document
B. Description of how plan is consistent with all appropriate policies (CZM, MA tidelands), including recap of any guidance to DEP re: substitutions/amplifications/offsets.
C. List of Stakeholders Interviewed
D. Table of Chapter 91 Licenses
E. List of properties and Chapter 91 license term information
F. Prior Harbor-related Plans
G. List of Public Access Requirements in existing Chapter 91 Licenses
H. Infrastructure Inventory
I. Waterfront Improvement Fund
J. Proposed revisions to the City of Chelsea Zoning Ordinance that support implementation of this DPA Master Plan

Appendix C: List of Stakeholders Interviewed

As part of the stakeholder engagement work to develop this plan, we conducted a number of interviews and meetings with landowners, businesses, non-profit organizations, and state and federal entities. A list of those stakeholders engaged during plan development include:

Businesses / Land owners:

Marginal St. Development LLC
Enterprise Rent-a-Car
Interpark
Eastern Minerals
Owners of 1 Forbes St.
Owners of Eastern Ave. Ext.
Harold Kalick

Non-profits:

Eco Youth (ECO Coordinator)
Health Chelsea (Ron & Jen Kelly)
Chelsea Collaborative (Yesenia & Glory)
GreenRoots (Rosanne Bongiovanni)
Churches (Rev Whitley – AME)
Chelsea Restoration (Ellen)
ROCA (TBD)
Chamber of Commerce (Rich)
Mystic River Watershed
Boston Harbor Now (Alice Brown)
TND (Aaron Wasserman)

Other stakeholders:

U.S. Coast Guard
Massachusetts Department of Transportation
Massachusetts Office of Coastal Zone Management
Massachusetts Department of Environmental Protection

Appendix E: List of properties and Chapter 91 license term information

Address	Current Primary Use(s)	Ch 91 License Term Limits
1 Forbes Street	Vacant. Anticipated mixed-use development (Outside of DPA)	DEP 13544: License issued 07-22-2013 for 30-year term, and Licensee may apply for an amendment for a license renewal of up to an additional 30 years; DPW 667, DPW 2657, DPW 2687: Licenses issued pre-1984, no term limit
295 Eastern Avenue	Partially vacant. Potential industrial site (Outside of DPA), Atlas Glen-More	DPW 4121, DPW 4634, DPW 5986: Licenses issued pre-1984, no term limit
305 Eastern Avenue	Glyptal Industrial Paint (Outside of DPA)	None
291 Eastern Avenue	Vacant – Former New England Trawler	None
283 Eastern Avenue	Gulf Oil truck depot	None
123 Eastern Avenue	Gulf Oil fuel storage	DPW 1066, DPW 1244, DPW 5305, DEQE 824: Licenses issued pre-1984, no term limit
111 Eastern Avenue	InterPARK parking. Potential mixed-use redevelopment	DEP 4629: License issued 05-24-1995 for an unspecified term, standard term is 30 years; DEP 6862: Temporary license issued 12/11/97 for a 10-year term; DPW 5577, DPW 1924, DPW 4988, DPW 5303, DPW 6118: Licenses issued pre-1984, no term limit
143 Eastern Avenue	Former CSX parcel / ROW –Mass DOT	None
701 Chelsea Street	City of Boston {Vacant?)	None
29 Eastern Avenue	State-owned parcel (Vacant)	None
15 Eastern Avenue	State-owned parcel (Vacant)	None
0 Eastern Avenue	City-owned abandoned right-of-way	None

257 Marginal Street	Enterprise rental car staging	DEP 2891: License issued 01-31-1992 for an unspecified term, standard term is 30-years; DEP 4981: Temporary License issued 10-18-1995 for a 10-year term; DEP 4981 Amendment: Amended Temporary License issued 9-5-2006 for a 10-year term; HLC 3471, DPW 996, DPW 1041, DPW 1593, DPW 4528: Licenses issued pre-1984, no term limit
249 Marginal Street	Enterprise rental car staging	DEP 4981: Temporary License issued 10-18-1995 for a 10-year term; DEP 4981 Amendment: Amended Temporary License issued 9-5-2006 for a 10-year term; DPW 996, DPW 1593, DPW 4528: Licenses issued pre-1984, no term limit
245 Marginal Street	Enterprise rental car staging	DEP 4981: Temporary License issued 10-18-1995 for a 10-year term; DEP 4981 Amendment: Amended Temporary License issued 9-5-2006 for a 10-year term; HLC 785, HLC 979, HLC 3311, POB 148, DPW 996, DPW 1481, DPW 1593, DPW 4528: Licenses issued pre-1984, no term limit
239 Marginal Street	Enterprise parking lot	POB 59, DPW 947, DEP 2010: Licenses issued pre-1984, no term limit
235 Marginal Street	Car rental (previously Enterprise repair shop)	None
229 Marginal Street	Harbor Foods	DEQE 832: License issued pre-1984, no term limit

227 Marginal Street	Office space	None
215 Marginal Street	Abandoned pile field	HLC 3254, DPW 4751: Licenses issued pre-1984, no term limit
201 Marginal Street	Floating docks	None
197 Marginal Street	Pier	None
99 Marginal Street	Eastern Minerals salt storage/PORT Park	DPW 5016, DPW 5017, DPW 6046: Licenses issued pre-1984, no term limit
91 Marginal Street	Open space/easement (MWRA parcel)	DPW 2012, DPW 5557: Licenses issued pre-1984, no term limit
71 Marginal Street	Eastern Minerals salt storage	HLC 867: License issued pre-1984, no term limit
69 Marginal Street	Eastern Minerals salt storage	HLC 863: License issued pre-1984, no term limit
59 Marginal Street	Eastern Minerals salt storage	DEP 5800: License issued 07-30-1996 for a 99-year term; DPW 1237: License issued pre-1984, no term limit
13 Marginal Street	Eastern Minerals salt storage	DEP 5800: License issued 07-30-1996 for a 99-year term
11 Marginal Street	Frank's Auto Shop	None

Appendix F: Recent Studies and Planning Documents Related to the Chelsea Creek Municipal Harbor Plan and DPA Master Plan

Annual Combined Sewer Overflow Press Releases and Reports
Developed by: City of Chelsea

Annual Water Quality Report Cards
Developed by: Mystic River Watershed Association

Assessing Heat Risks to Prepare Chelsea, Massachusetts for a Changing Climate
Date: 2017
Developed by: Worcester Polytechnic Institute
Online at: https://wp.wpi.edu/boston/projects/projects-2017/2017-heat-risks-in-chelsea/

A Vision for the Chelsea Waterfront
Date: October, 2016
Developed by: Metropolitan Area Planning Council (MAPC)
Online at:
ftp://ftp.mapc.org/Chelsea_Waterfront/Chelsea%20Waterfront%20Vision%202016%20Final%20Report.pdf

Chelsea Open Space & Recreation Plan Update
Date: June, 2017
Developed by: Metropolitan Area Planning Council
Online at: https://www.chelseama.gov/sites/chelseama/files/uploads/chelseaosrp_august29.pdf

City of Chelsea Community Development Plan
Date: June, 2004
Developed by: Taintor & Associates
Online at: https://www.chelseama.gov/sites/chelseama/files/uploads/chelseacdp.pdf

City of Chelsea Hazard Mitigation Plan 2014 Update
Date: 2014
Developed by: Metropolitan Area Planning Council
Online at:
https://www.chelseama.gov/sites/chelseama/files/uploads/cityreviewchelsea_draft_plan_update_5-16-14.pdf

City of Chelsea Municipal Vulnerability Preparedness Program: Community Resilience Building Workshop Summary of Findings
Date: 2018
Developed by: Metropolitan Area Planning Council
Online at: Unknown

Designation Decision for the Chelsea Creek Designated Port Area, Chelsea, MA.
Date: April 6, 2016
Developed by: Executive Office of Energy and Environmental Affairs, Massachusetts Office of Coastal Zone management.
Online at: https://www.mass.gov/files/documents/2016/08/ri/chelsea-creek-dpa-designation-decision-2016.pdf

Environmental Justice Analysis in Support of the National Pollutant Discharge Elimination System (NPDES) Permits for the Chelsea River Bulk Petroleum Storage Facilities
Date: March, 2014
Developed by: Environmental Protection Agency
Online at:
https://www3.epa.gov/region1/npdes/chelseacreekfuelterminals/pdfs/ChelseaBulkTerminalEJA.pdf

Preparing the City of Chelsea, Massachusetts to Better Adapt to Climate Change
Date: 2014
Developed by: Worcester Polytechnic Institute
Online at: https://web.wpi.edu/Pubs/E-project/Available/E-project-101614-174110/unrestricted/Boston_Climate_IQP-_final_report.pdf

Promoting Public Uses on the Chelsea Waterfront
Date: Unknown
Developed by: Hoghaud, B., et al.
Online at: https://web.wpi.edu/Pubs/E-project/Available/E-project-101316-114938/unrestricted/ChelseaWaterfrontUse.pdf

Urban Green Infrastructure in Mystic River Communities, Subwatershed Plan for Broadway, Chelsea, MA
Date: June, 2013
Developed by: Charles River Watershed Association, Mystic River Watershed Association, and Chelsea Collaborative
Online at:
https://static1.squarespace.com/static/563d6078e4b0396c216603c8/t/563e151ee4b0f5552f678830/1375112525085/ChelseaSubwatershedPlan2013_Final.pdf

Appendix G: List of Public Access Requirements in existing Chapter 91 Licenses

Those parcels, including their public access requirements, are as follows:

- **13 and 59 Marginal Street** (DEP License # 5800, issued 7/30/1996): In accordance with the public easement that exists by law on private tidelands, the licensee shall allow the public to use and to pass freely upon the area of the subject property lying between the high and low water marks, for the purposes of fishing, fowling, navigation, and the natural derivatives thereof. Commonwealth Tidelands. The Licensee shall not restrict the public's right to use and to pass freely, for any lawful purpose, upon lands lying seaward of the low water mark. Said lands are held in trust by the Commonwealth for the benefit of the public. No restriction on the exercise of these public rights shall be imposed unless otherwise expressly provided in this license. Unless otherwise expressly provided by this license, the licensee shall not limit the hours of availability of any areas of the subject property designated for public passage, nor place any gates, fences, or other structures on such areas in a manner that would impede or discourage the free flow of pedestrian movement thereon.
- **245-257 Marginal Street** (DEP License # 4981, issued 10/18/1995): Special Condition 6: (A) The Licensee shall construct, landscape and maintain in good repair temporary walkway facilities open to the public, totaling no less than 0.5 acres in size along the westerly, southerly, and easterly perimeter of the site in the locations specified [in the license plan]...Said walkway facilities shall...include the following components: (a) the entire walkway, including the stone dust portion along the waterfront, shall have a minimum width of 10 feet clear with a hand rail or other appropriate measure along the entire waterfront to promote safe viewing opportunities of the water; (b) two attractively designed entryways to said walkway facilities shall be constructed along Marginal Street containing decorative posts and signage in accordance with Special Condition 11; (c) one shade structure with associated bench shall be constructed at the easterly plaza; (d) landscaping including trees shall be located along the walkway facilities and Marginal Street and not within the parking lot area enclosed by said fence, with the canopy of said trees to be generally no more than 30 feet in width when mature; (e) landscaping generally along the stone dust pathway shall consist of vegetation no larger than low-lying shrubs, except in those locations noted on the "Proposed Site Plan" where trees shall be planted in accordance with (d) above; (f) trash receptacles shall be provided; and (g) an appropriate number of ornamental lighting standards shall be constructed.

  (B) No gates shall be erected across or along the walkway facilities. If repeated incidents of vandalism occur that can be well document and all other reasonable security measures to cure the problem are unsuccessful, then the Department may consider gates or limiting the hours of access to the walkway as an amendment of the public access rules that may be established pursuant to Special Condition 11.

  (C) The walkway including the stone dust portion and plaza shall be designed to also accommodate police and ambulance vehicles. The shade structures, benches, and ornamental light standards shall be constructed from vandal and fire resistant materials. The ornamental lighting standards as well as the light standards specified in Special Condition 2 shall not shed light onto the Chelsea Creek to ensure there is no interference with the night vision of vessel operators navigating the Chelsea Creek. Landscaping shall include a subsurface sprinkler system to ensure adequate watering of the vegetation. Said walkway facilities shall be completed and open to the public within 60 days of the commencement of parking on the site.

Special Condition 9: The Licensee shall provide a minimum of seven (7) contiguous parking spaces exclusively available to users of the walkway or nearby public park facilities. Said spaces shall be located on the site in the location shown on...the license plan. The Licensee shall mark the 7 parking spaces by signage or other means as being solely available to members of the public who wish to use the walkway or nearby park facilities. These 7 parking spaces shall be designated by the Licensee and marked by signage in accordance with Special Condition 11 or other means within 60 days of the commencement of airport-related parking on the site.

Special Condition 10: The walkway facilities specified in Special Condition 6 and associated parking shall be available to the general public, free of charge, 24 hours a day, unless the Department approves in writing other hours of operation, subject to reasonable rules as described in Special Condition 11.

Special Condition 11: The Licensee may adopt rules governing the walkway facilities on the site, subject to prior review and written approval by the Department, as are necessary for the protection of public health and safety and private property, and to ensure their use and enjoyment by minimizing conflicts between user groups. No amendment to said rules shall be made without written approval by the Department, which approval shall not be unreasonably withheld.

Special Condition 12: Upon completion of the walkway facilities, the Licensee shall place and maintain in good repair appropriate signage of an adequate size to be clearly visible to pedestrians along the Marginal Street. Said signage shall be consistent with all local laws, regulations and any design guidelines that may be specified by the Department or its designee. Said signage shall be placed at both Marginal Street entryways to the walkway facilities, encourage public patronage of the walkway facilities, state the hours of public access and any reasonable rules for their use in accordance with Special Condition 11. At least one sign shall be placed in a prominent location stating the walkway facilities were required by the Department of Environmental Protection, the waterways license number of the project, and the location on the site where a copy of the license may be inspected by the public.

Special Condition 13: Said walkway facilities specified in Special Condition 6 are an interim use during the ten (10) year term of this license. The intent of this license is that the walkway facilities shall remain as part of the site and the Licensee shall not take any action to legally subdivide said walkway facilities from the parking area so as to create additional parcels beyond those that exist presently. If at the end of the license term, the marketing plan identifies a future water-dependent-industrial user of the site, then the walkway and associated amenities may be modified or eliminated if necessary to accommodate the water-dependent-industrial use. If a user other than water-dependent-industrial is identified, then the walkway and associated amenities should remain publicly accessible or enhanced, as appropriate. Standard Waterways License Condition 9 regarding public access on Private Tidelands and Filled Tidelands.

- **1 Forbes Street** (DEP license # 13544, issued 7/22/2013): Special Condition 1: In partial compensation for private use of structures on tidelands, which interferes with the rights of the public to use such lands, the Licensee shall allow the public to pass on foot, for any purpose and from dawn to dusk, within the area of the subject property lying seaward of the mean high water mark on the eastern and western ends of the property and along the existing bulkheads on the approximately 2 acre area labeled "public access area" [on the License Plan]...(b) The Licensee shall provide a public access route to connect the adjacent public way, Forbes Street, with the full length of the waterfront for public pedestrians, bicyclists, and state and local emergency

vehicles that is clearly delineated with way-finding signage. (c) The Licensee shall landscape and maintain in good repair this public access area for public access along, and enjoyment of, the waterfront. The public access area shall include, but not be limited to, the following pedestrian amenities: a walkway that shares the vehicular drive but is at least 10 feet wide through the full length of the public access area; fully accessible public restroom facilities and at least two bike racks located near the wind turbine; lighting that does not reflect on to the waters of Chelsea Creek; at least two groups of seating including one with clear views of the confluence of the Chelsea Creek and Mill Creek; at least two trash receptacles located by the restroom facility and by the seating area in the east end of the project site; and landscaping that complements but does not obstruct public access. No gates or other barriers shall be installed to impede pedestrian circulation in the areas designated for public access. Interpretative plaques shall be installed at the wind turbine operations building to explain wind energy, as described in Special Condition #3, below, and also along the bulkhead and east end of the property to address the Chelsea Creek and Mill Creek environment and its significance in U.S. History. (d) The Licensee shall place and maintain, in good repair, a public access sign near the western and northern property lines adjacent to the mean high water shoreline as well as in a prominent location adjacent to the wind turbine authorized herein. These three signs shall be designed in accordance with the Department's signage requirements, attached hereto, and shall be posted within 3 months of license issuance. The sign adjacent to the wind turbine shall include a statement that the walkway facilities were required by the MassDEP, the waterways license number of the project, and the location where the public may inspect a copy of the license. (e) The Licensee may adopt reasonable rules, subject to prior review and written approval by the Department, as are necessary for the protection of public health and safety and private property, and to ensure public use and enjoyment by minimizing conflicts between user groups. The exercise by the public of free-on-foot passage in accordance with this condition shall be considered a permitted use to which the limited liability provisions of M.G.L. c.21, s. 17c shall apply. (f) The public access area shall be completed and available for safe pedestrian use by the date the first Certificate of Occupancy is issued for the Project Site except for landscaping and other matters...

Special Condition 3: The Licensee shall construct and maintain the 1-story wind turbine operations and maintenance building...in a manner that does not disrupt or interfere with public access along the bulkhead. The Licensee shall install at least one interpretative plaque on or near the building on the functionality of the wind turbine and provide an instrument display that provides information to the public related to power consumption, power generation, wind patterns and wind generation. Such information shall be available from dawn to dusk, the hours of public access.

Special Condition 4: The license for any structure authorized herein shall expire if the structure is not completed or is abandoned and not used for the purpose for which it was licensed for a period of five consecutive years or more in accordance with 310 CMR 9.25(1)...

Special Condition 6: The Licensee shall maintain the structures and uses authorized in this license in a manner that shall not prevent the commitment of space or significantly discourage future water-dependent industrial activity on the property or elsewhere within the Chelsea Creek Designated Port Area in accordance with 310 CMR 9.15(1)(d) and 310 CMR 9.36(5)...

Standard Waterways License Conditions: (9) This License authorizes structure(s) and/or fill on: Private Tidelands. In accordance with the public easement that exists by law on private tidelands, the licensee shall allow the public to use and to pass freely upon the area of the subject property

lying between the high and low water marks, for the purposes of fishing, fowling, navigation, and the natural derivatives thereof.

- **111 Eastern Ave.** (DEP License # 4629, issued 5/24/1995): The licensee shall allow the public to use and to pass freely upon the area of the subject property lying between the high and low water marks, for the purposes of fishing, fowling, navigation, and the natural derivatives thereof. The licensee shall not limit the hours of availability of any areas of the subject property designated for public passage, nor place any gates, fences, or other structures on such areas in a manner that would impede of discourage the free flow of pedestrian movement thereon.
- **111 Eastern Ave.** (DEP License # 6862, issued 12/11/1997): Special Condition 4: Licensee shall construct and maintain a publicly accessible waterfront open space to be located at the southern end of the site…. Said open space shall include the following amenities: seating, shade structure, lighting, walkway, and landscaping. Said walkway shall extend to Eastern Ave. near the intersection of Central Ave. in order that pedestrians may utilize the existing traffic signal to cross Eastern Ave. A 25-ft wide grassy swale shall be located immediately north of the proposed open space.... Parking on the site shall not commence until the publicly accessible open space is made open to the public. The walkway facilities shall be available free of charge, 24 hours a day, unless the Dept. approves in writing other hours of operation. Licensee may adopt rules governing the walkway facilities on the site, subject to prior review and written approval of the Department as are necessary for protection of public health and safety and private property, and to ensure their use and enjoyment by minimizing conflicts between user groups. Licensee shall place and maintain in good repair appropriate signage of adequate size to be clearly visible to pedestrians along Eastern Ave..... Signage shall be placed at the Eastern Ave. entryway to the open space facility, encourage public patronage of the waterfront walkway, state the hours of public access and any reasonable rules for their use.... The licensee shall allow the public to use and to pass freely upon the area of the subject property lying between the high and low water marks, for the purposes of fishing, fowling, navigation, and the natural derivatives thereof.

Appendix H: Infrastructure Inventory

11/9/18

Moffatt & Nichol

City of Chelsea Inspections

[Photos will be provided in the final document]

295 Eastern Ave

This parcel comprises approximately 1,306-ft of natural shoreline, 262-ft of staggered granite blocks, and 130-ft of marsh. The topside consists of a marshy area with shrubbery. This parcel is outside the DPA, and the city wants a continuous harbor walk connecting Forbes and Eastern streets. This location has grassy and soft ground, marsh-like uplands. The conditions given below move in a south to north direction.

Typical observed conditions:

1. The waterfront has a typical mix of cobbles, medium sized rocks (6" diameter), with large rocks up to 1.5'x1.5' in size
    a. Slope is typically 4:1 to 5:1
    b. See Photo 1 for typical waterfront
2. At the north corner shoreline, there's a collection of large rocks up to 3'x3' in size.
3. After this corner, there's an area where concrete, rebar, and bricks have been dumped
    a. Slope is 6:1 in this area
    b. See Photo 2 for concrete, rebar, and brick debris
4. At the inner corner before the RR tracks, the waterfront is a gravel slope with grass in the upland area.
    a. Slope is 10:1 in this area
    b. See Photo 3
5. Large granite blocks are stacked along the train tracks from the northern part of 295 Eastern Avenue parcel to 1 Forbes Street parcel.

No existing condition rating is applicable to this parcel based on natural shoreline and lack of marine structures.

The reuse potential rating is **Medium**. The site itself has significant potential for development, however, there are no existing shoreline structures that will retain fill. It is likely that any development will require installation of these types of structures at significant cost.

1 Forbes Street

This parcel comprises approximately 1,540-ft of steel sheet pile bulkhead and concrete cap, 468-ft of natural shoreline, and 370-ft of marsh. The northern corner of the site contains a storm overflow basin. The topside consists of a grassy area and concrete walkway. This parcel is outside of the DPA.

Typical observed conditions:

1. North of the train tracks this area contains small gravel with scattered medium to large rocks
    a. 10:1 slope
    b. Grassy/marsh uplands
2. Steel sheet pile bulkhead with concrete cap

a. South face
    i. Does not appear to have coating
    ii. Major corrosion at the top of sheet to estimated mean low water, with pitting, flaking and peeling
    iii. See Photos 4 and 5 for typical conditions
b. Double channel wale
    1. Major corrosion, pitting, flaking and peeling
    2. Tie-rod exhibits minor corrosion, but no bending
    3. Wale seats exhibit severe corrosion, 100% section-loss
    4. See Photo 6 for wale condition
    5. See Photo 7 for typical wale seat
c. Concrete cap exhibits minor cracks in isolated locations
d. East face
    1. Visible sections of sheet pile wall exhibits corrosion
e. Wale exhibits major corrosion, pitting, flaking and peeling
    1. Wale is misaligned due to potential overstressing of structure
    2. Possible deflection of wall most of the length to the notch
    3. See Photo 8
f. Concrete cap exhibits isolated minor cracks, see Photo 9
g. Topside behind cap exhibits sinkholes
    i. Sinkhole at the notch area appears to have been previously repaired, see Photo 10
    ii. Sinkholes typical for length of sheet pile wall from notch to north end
        1. Some areas repaired with concrete or bricks
    iii. At the north end, the bulkhead heads west and the sheeting appears to be in good condition
        1. The sheeting in this location is set back with a marsh area between it and water, see Photo 11

The existing condition rating of the shoreline structures at 1 Forbes Street is in overall **Poor** condition due to significant corrosion of the sheeting (no coating), major deterioration of the wale, and the widespread sinkholes behind the concrete cap.

The reuse potential rating is **Medium** due to significant repairs required to prevent further upland material subsidence and repairs to bulkhead and hardware.

InterPARK (111 Eastern Avenue)

This parcel is comprised of an approximately 520-ft concrete gravity wall with timber piles, 1,052-ft of concrete panels with steel soldier H-piles and concrete gravity wall, 120-ft steel sheet pile bulkhead, and 133-ft of natural shoreline. The topside consists of a grass strip followed by a paved parking lot. There are 11 seaward structures for vessel berthing (3 with access). The concrete gravity wall appears to be the original earth retaining structure which has been supplemented with the soldier pile/concrete panel wall. The conditions given below move in a north to south direction.

Typical observed conditions:

1. Concrete gravity wall
    a. Typical vertical cracks every 4’ to 6’, typical areas of honeycombing, rust stains, see Photo 12
    b. Severe cracking with exposed rebar, see Photo 13

   c. Severe full vertical height cracking with exposed rebar
2. H-piles (soldier piles) with concrete panels
   a. There is a 150' stretch of H-piles and concrete panel wall before sheet pile wall, see Photo 14
   b. Concrete panels are just below water line at time of inspection, appear to be in good condition.
   c. H-piles exhibit coating failure, corrosion from estimated high water level down to mean low water
   d. Wale appears to be in good condition
   e. Tie-backs exhibit minor corrosion
   f. Front bearing plates and tie-rods exhibit moderate corrosion, coating failure, pitting, flaking and peeling
3. Steel sheet pile wall
   a. Typical coating failure and corrosion, see Photo 15
   b. Wale appears to be in good condition
   c. Tie-rod and bearing plate exhibit minor corrosion, coating failure, pitting, flaking and peeling
4. Green (fusion bonded epoxy coating) H-piles and concrete panel
   a. Piles exhibit minor corrosion and coating loss, see Photo 16
   b. Wale, bearing plates, and tie-rods exhibit major corrosion, pitting, flaking and peeling
   c. Concrete gravity wall exhibits 20' section with severe spall with exposed rebar, up to 70% section-loss, see Photo 17
   d. Piles and concrete panel extend to bridge

The area at InterPARK is given various existing condition ratings. The H-pile /concrete panel walls are in **Fair** condition due to minor to moderate corrosion of the H-piles and wale. The steel sheet pile wall is in **Fair** condition due to minor to moderate corrosion to the sheeting and hardware. The concrete gravity wall is in **Poor** condition due to typical major cracking in addition to isolated areas of severe cracks and severe spalling with exposed rebar. The seaward berthing structures are in **Critical** condition.

The reuse potential rating is **Medium.** The concrete gravity wall will likely require significant repairs prior to site development. The berthing structures in critical condition, seaward of the bulkhead, require demolition prior to future development.

CSX Parcel/ROW (143 Eastern Avenue)

This parcel comprises approximately 20-ft of natural shoreline. The topside consists of the bridge foundation.

Not accessible

State Owned Parcel (15 Eastern Avenue)

This parcel comprises approximately 226-ft of natural shoreline and upland rip rap revetment. The topside consists of a concrete walkway, shrubs, grass, a small building, and an access road.

Not accessible

Marginal Street Development, LLC (245-257 Marginal Street)

The parcel of 245 Marginal Street comprises approximately 230-ft of steel sheet pile wall. The topside contains grass strip and concrete area followed by a paved parking lot. The parcel of 249 Marginal

Street comprises approximately 200-ft rip rap revetment with refurbished concrete caps, and the topside contains grass strip followed by a paved parking lot. The parcel of 257 Marginal Street comprises approximately 577-ft rip rap revetment, 42-ft stacked concrete beam wall, and 135-ft rip rap section with steel sheet pile toe. The topside contains a grass strip backed by a paved parking lot. The conditions given below move in a south to north direction.

Typical observed conditions:

1. Topside consists of benches, light poles, concrete panels and a grass strip
    a. Concrete panels are uneven, area needs to be re-graded
    b. See Photo 18
2. Sinkholes are typical behind the steel sheeting
3. Steel sheet pile wall
    a. Waterside face is inaccessible
    b. Exhibits moderate corrosion, pitting, flaking and peeling
    c. Deflects up to 4' most of wall length, see Photo 19
    d. See Photo 20 for view of sheeting from Enterprise Lot
4. Wale exhibits moderate corrosion, pitting, flaking and peeling
    a. Most of wall length wale is missing or collapsed, see Photo 21
    b. 20' section of cave-in
5. Sheeting ends and a steep slope with concrete caps and rip rap takes its place
    a. Typically, 2:1 slope with rip rap up to 2'x2' with cobbles mixed in
    b. Cap behind rip rap, leaning towards water
    c. See Photo 22 for typical view
    d. Large sinkhole under concrete panels near end of sheeting, see Photo 23
6. Slope changes from 2:1 to 1:1
    a. Cap failure approximately 40 LF, area is roped off, uplands subsidence, see Photo 24
7. Sheet pile wall at toe of rip rap slope, see Photo 25
    a. Begins just after failed cap area
    b. Wale inaccessible for inspection
    c. Major corrosion noted
    d. After approximately 120' of sheeting, it extends out into the water at a 90-degree angle. Sheeting ends here.

The existing condition rating of the shoreline structures at the Rental Car Staging is **Poor/Serious** due to widespread structural member failures and upland material subsidence.

The reuse potential rating is **Low** due to the significant deterioration and likelihood of a complete rebuild of these structures.

Enterprise Parcel (239 Marginal Street)

This parcel comprises approximately 1,091-ft rip rap revetment and a paved parking lot behind it. The conditions given below move in a north to south direction.

Typical observed conditions:

1. Typical 2:1 slope with rip rap up to 10" diameter with gravel mixed in, see Photo 26
    a. Rip rap appears to be of newer vintage
2. After approximately 200', the slope changes to 3:1

3. Parking lot shows signs of settlement and slope begins to dip towards shoreline, noted from back edge of rip rap to approximately 20' back and into the parking lot
    a. Rip rap now above pavement
    b. See Photo 27

No existing condition rating is applicable to this parcel based on natural shoreline and lack of marine structures.

The usability is **Medium** due to good condition of existing lot for current usage. If upland surcharge loading increases, then cost implications will be significant. Additionally, the site has significant potential for development, however, there are no existing shoreline structures that will retain fill. It is likely that any development will require installation of these types of structures at significant cost.

Kalick Waterfront Parcels (197-215 Marginal Street)

The parcel of 197 Marginal Street comprises approximately 235-ft rip rap revetment with a paved parking lot behind it. The use of the docks is restricted to non-recreational functions. The parcel of 201 Marginal Street is comprised of approximately 190-ft rip rap revetment, 12,000-sq. ft. concrete pier, and 841-ft floating dock. The topside consists of a paved parking lot and a building. The use of the docks is restricted to non-recreational functions. The parcel of 215 Marginal Street is comprised of approximately 1,100-ft of abandoned timber piles and mudflats (470-ft along the shore) and a 128-ft timber soldier wall with staggered concrete beams. The topside consists of a small natural shoreline strip immediately followed by a paved roadway. The conditions given below move in a north to south direction.

Typical observed conditions:

1. Remaining timber members are severely deteriorated, see Photo 28
2. Mostly 1:1 slope through middle stretch of roadway, 2:1 at limits
    a. Small concrete caps at top of slope
        i. Stacked
        ii. Displaced, rotated towards waterline
        iii. Fill loss under roadway, two 50' sections
    b. See Photo 29
3. Slope 3:1 to 4:1 on north side of pier
4. Pier at 201 marginal Street appears to be of newer vintage
    a. Pier inaccessible
    b. See Photo 30
5. Rip rap slope 2:1, stones up to 1.5'x1.5' in size, see Photo 31
6. Upland gravel appears to be washing away over top of rip rap

The shoreline structures at Kalick Pier are given two existing conditions rating ratings. Parcels 197 and 201 Marginal Street are in **Good** condition due to apparent recently constructed pier as well as stable sloped rip rap. Parcel 215 Marginal Street is in **Critical** condition due to uplands subsidence, displaced concrete caps along edge of water, and severely deteriorated and/or broken timber elements.

The reuse potential rating is **High** for 197 and 201 Marginal Street parcels based on its good condition and apparent recent upgrades. The reuse potential rating is **Low** for 215 Marginal Street parcel. The existing marine structures are non-usable and will likely require a full rebuild.

Appendix I: Waterfront Improvement Fund

[Text proposed for discussion purposes]

The City of Chelsea should establish a Chelsea Creek Waterfront Improvement Fund to receive Chapter 91 public benefit mitigation/offset funds and other donations. The funds should be managed and overseen by a Waterfront Improvement Fund Board for purposes of enhancing the waterfront along Chelsea creek, with a specific focus on public access, public programming, climate change mitigation, and infrastructure improvements/maintenance. The funds must be used in a manner consistent with the Chelsea Creek Harbor Management Plan and DPA Master Plan, and projects should not interfere with or preclude water-dependent industrial uses.

As part of this, the City of Chelsea will establish a board to oversee collection and management of the fund.

Calculations for payments into the fund will differ based on the nature of the license and the ability to provide point access on--site.

For temporary licenses of non-water-dependent uses within the DPA:

Temporary uses along Chelsea Creek, though important to the local economy, preclude water-dependent uses. And though the temporary license conditions stipulate that properties must be marketed for water-dependent uses, this is not enforced, nor is there any incentive for a land-owner to give preference to a water-dependent use.

In order to incentivize the marketing of properties for water-dependent uses, property owners with temporary use licenses will be required to pay a fee, calculated as follows:

Need to develop this: Some options:

- a flat annual fee or a one-time payment under each temporary license based on
  - square footage of property in jurisdiction
  - type of licensed use in jurisdiction
  - property value

For Chapter 91 Licenses that cannot comply with the public access requirements of this plan:

Although public access is not a priority within a Designated Port Area, there are examples of point access, such as PORT Park, that provide public benefits while limiting impacts to water-dependent industrial uses. Chelsea residents have expressed a strong interest in increasing both physical and visual access to the Creek, and this plan advocates for the development of new point access opportunities that are compatible with and not interfere with water-dependent industrial uses. More specifically, the plan requires that all permitted development in the DPA provide point access from the public right-of-way to the water's edge at every property boundary. Additionally, if point access exists on the edge of an abutting property, efforts should be made to locate any new point access in a manner that is directly adjacent to the existing access and without any physical barriers.

For projects that cannot reasonably provide this public access for reasons not associated with the safe operations of water-dependent industrial uses, they will be required to contribute the the Waterfront Improvement Fund.

This focus on providing point access is limited to the DPA, and includes access on sites with temporary licenses. Outside of the DPA, public access can include both point and lateral access and is treated separately.

Calculations for payment into the Fund are as follows: Distance (in feet) from public right-of-way to the waterfront X 10' X $$). [Dollar value may be determined based on a standard amount, property value, or some other means]